

ADDITIONAL NOTES ON THE ERIOCAULACEAE. I

Harold N. Moldenke

ERIOCAULACEAE Lindl.

Additional bibliography: Gomez de la Maza, Not. Bot. Sist. 49, 96, 104, 110, & 114. 1893; Gomez de la Maza, Jimenez, & Roig y Mesa, Fl. Cuba 9. 1914; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 143, 207, 229, 230, 275, 357, 406, 428, 429, 440, 454, 495, 585, 627, 636, 649, 664, 673, 735, 737, 778, 887, 976, 1003, 1085, 1102, 1120, 1121, 1124, 1228, vii, lii, & lvii. 1973; Faris, Irish Nat. Journ. 18: 93. 1974; Fitter, Fitter, & Elamey, Wild Fls. Brit. & N. Eu. 260, 261, & 290, fig. 9. 1974; Malaisse in Lieth, Phen. & Season. Model. 281--283 & 439, fig. 7c. 1974; Moldenke, Phytologia 29: 192--239. 1974.

BLASTOCAULON Ruhl.

Additional bibliography: Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 143. 1973; J. Hutchinson, Fam. Flow. Pl., ed. 3, 712 & 916. 1973; Moldenke, Phytologia 29: 81--82. 1974.

CARPOTEPALA Moldenke

Additional bibliography: Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 207. 1973; J. Hutchinson, Fam. Flow. Pl., ed. 3, 710 & 920. 1973; Moldenke, Phytologia 29: 82. 1974.

Hutchinson (1973) reduces this genus to synonymy under Paepalanthus Mart.

COMANTHERA L. B. Sm.

Additional bibliography: Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 275. 1973; J. Hutchinson, Fam. Flow. Pl., ed. 3, 710 & 923. 1973; Moldenke, Phytologia 29: 82--83. 1974.

ERIOCAULON Gron.

Gomez de la Maza, Not. Bot. Sist. 49 & 104. 1893; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 173, 229, 230, 357, 406, 428, 429, 636, 664, 778, 976, 1085, 1120, & 1121. 1973; J. Hutchinson, Fam. Flow. Pl., ed. 3, 710, 712, & 930, fig. 364a. 1973; Dony, Per-ring, & Rob, English Names Wild Fls. 28 & 101. 1974; Faris, Irish Nat. Journ. 18: 93. 1974; Fitter, Fitter, & Elamey, Wild Fls. Brit. & N. Eu. 260, 261, & 290, fig. 9. 1974; Malaisse in Lieth, Phen. & Season. Model. 281--283 & 439, fig. 7c. 1974; Moldenke, Phytologia 29: 83--113. 1974; A. L. Moldenke, Phytologia 29: 171. 1974; Rousseau, Géogr. Florist. Québ. [Trav. & Doc. Centr. Étud. Nord. 7:] 120, 382, 470, 480, 498, 509, 550, 625, 705, & 762. 1974.

ERIOCAULON AQUATICUM (J. Hill) Druce

Additional synonymy: Eriocaulon septangulare var. septangulare Rousseau, Géogr. Florist. Québ. [Trav. & Doc. Centr. Étud. Nord. 7:]

762. 1974.

Additional bibliography: Airy Shaw in J. C. Willis, *Dict. Flow. Pl.*, ed. 8, 429. 1973; J. Hutchinson, *Fam. Flow. Pl.*, ed. 3, 32, 712, & 930, fig. 364a. 1973; Dony, Perring, & Rob, *English Names Wild Fls.* 28 & 101. 1974; Faris, *Irish Nat. Journ.* 18: 93. 1974; Fitter, Fitter, & Blamey, *Wild Fls. Brit. & N. Eu.* 260, 261, & 290, fig. 9. 1974; Moldenke, *Phytologia* 29: 89--90, 103, 111, & 216. 1974.

Additional illustrations: J. Hutchinson, *Fam. Flow. Pl.*, ed. 3, 712, fig. 364a. 1973; Fitter, Fitter, & Blamey, *Wild Fls. Brit. & N. Eu.* 269, fig. 9 [in color]. 1974.

Additional citations: EIRE: Galway Co.: Sparrow s.n. [1 Sept. 1964] (Mi).

ERIOCAULON BIFISTULOSUM Van Heurck & Muell.-Arg.

Additional bibliography: Malaisse in Lieth, *Phen. & Season. Model.* 283 & 439. 1974; Moldenke, *Phytologia* 29: 93--94, 200, & 232. 1974.

ERIOCAULON BROWNIANUM Mart.

Additional bibliography: Moldenke, *Phytologia* 29: 86, 95--97, & 211. 1974.

Additional citations: SRI LANKA: Moldenke, Moldenke, Jayasuriya, & Sumithraarachchi 28293 (Tu).

ERIOCAULON BROWNIANUM var. LATIFOLIUM Moldenke

Additional bibliography: Moldenke, *Phytologia* 29: 96--97 & 211. 1974.

Additional citations: SRI LANKA: Moldenke, Moldenke, Jayasuriya, & Sumithraarachchi 28297 (Tu).

ERIOCAULON CINEREUM R. Br.

Additional bibliography: Moldenke, *Phytologia* 29: 85, 99--101, 196, 200, 209, 220, 221, 231, 232, & 236. 1974.

Additional citations: SRI LANKA: Cramer 3160 (W--2718343).

ERIOCAULON COLLINUM Hook. f.

Additional bibliography: Moldenke, *Phytologia* 29: 86, 101--102, 197, 202, 205, & 206. 1974.

Additional citations: SRI LANKA: Moldenke, Moldenke, Jayasuriya, & Sumithraarachohi 28287 (Tu), 28307 (Tu).

ERIOCAULON COMPRESSUM Lam.

Additional bibliography: Gomez de la Maza, *Not. Bot. Sist.* 49 & 104. 1893; Moldenke, *Phytologia* 29: 102--104, 107, 109, 111, 204, & 216. 1974.

Additional citations: NEW JERSEY: Atlantic Co.: Moldenke & Moldenke 28597 (Tu).

ERIOCAULON CRISTATUM Mart.

Additional bibliography: Moldenke, *Phytologia* 29: 92, 98, 105, & 205. 1974.

Additional citations: SRI LANKA: Moldenke & Moldenke 28325 (Ac).

ERIOCAULON DALZELLII var. GLABRATUM Moldenke, *Phytologia* 28: 192. 1974.

Bibliography: Moldenke, *Phytologia* 28: 192 & 444. 1974.

Citations: INDIA: Gujarat: Nain s.n. [Aurangabad, 7-9-71; N. Y. Bot. Gard. type photo 8816] (Ac--type, N--photo of type, Z--isotype, Z--photo of type).

ERIOCAULON DECANGULARE L.

Additional bibliography: Moldenke, *Phytologia* 29: 103, 106--113, 204, & 216. 1974.

Additional citations: NEW JERSEY: Burlington Co.: Moldenke & Moldenke 29139 (Ac, Kh, Ld, Tu).

ERIOCAULON DECANGULARE f. PARVICEPS Moldenke

Additional bibliography: Moldenke, *Phytologia* 29: 103, 107, 109--110, 204, & 216. 1974.

Additional citations: NICARAGUA: Zelaya: Nelson & Atwood 4468 (M1).

ERIOCAULON DIMORPHOPETALUM Moldenke

Additional bibliography: Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 63 & 204, 1949; Moldenke, *Phytologia* 24: 357. 1972.

ERIOCAULON DIOECUM Ruhl.

Additional bibliography: Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 43 & 204. 1949; Moldenke, *Phytologia* 24: 357. 1972.

ERIOCAULON ECHINOSPERMUM C. Wright

Synonymy: Eriocaulon echinospermum Sauvalle ex Gomez de la Maza, *Not. Bot. Sist.* 49. 1893.

Additional bibliography: Gomez de la Maza, *Not. Bot. Sist.* 49 & 104. 1893; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 43 & 204. 1949; Moldenke, *Phytologia* 24: 358. 1972.

ERIOCAULON FULIGINOSUM C. Wright

Additional synonymy: Eriocaulon sphaerospermum Sauvalle ex Gomez de la Maza, *Not. Bot. Sist.* 49. 1893. Eriocaulon trichosepalum Sauvalle ex Gomez de la Maza, *Not. Bot. Sist.* 49. 1893.

Additional bibliography: Gomez de la Maza, *Not. Bot. Sist.* 49 & 104. 1893; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 36, 43, 45, & 204. 1949; Moldenke, *Phytologia* 24: 460. 1972.

ERIOCAULON LINEARE Small

Additional bibliography: Moldenke, *Phytologia* 29: 203--204 &

216. 1974.

Additional citations: ALABAMA: Houston Co.: R. Kral 43404 (Mi).

ERIOCAULON MALAISSEI Moldenke

Additional bibliography: Moldenke, *Phytologia* 24: 475. 1972; Malaisse in Lieth, Phen. & Season. Model. 281--283 & 439, fig. 7c. 1974.

ERIOCAULON MELANOCEPHALUM Kunth

Additional bibliography: Gomez de la Maza, *Not. Bot. Sist.* 49 & 104. 1893; Moldenke, *Phytologia* 29: 207. 1974.

ERIOCAULON MELANOCEPHALUM var. LONGIPES Griseb.

Additional bibliography: Gomez de la Maza, *Not. Bot. Sist.* 49 & 104. 1893; Moldenke, *Phytologia* 24: 476. 1972.

ERIOCAULON NILAGIRENSE Steud.

Additional bibliography: Moldenke, *Phytologia* 29: 211--212 & 238. 1974.

Additional citations: SRI LANKA: Cramer 3149 (W--2718353).

ERIOCAULON PELLUCIDUM Michx.

Additional bibliography: Airy Shaw in J. C. Willis, *Dict. Flow.* Pl., ed. 8, 429. 1973; Moldenke, *Phytologia* 29: 204 & 214--219. 1974.

Additional citations: QUÉBEC: Argenteuil Co.: Auclair & Walther s.n. [Sept. 22, 1962] (Mi). ONTARIO: Thunder Bay Dist.: Hartley 1606 (Mi). MAINE: Waldo Co.: Friesner 23054 (Mi). VIRGINIA: Augusta Co.: Adams & Wherry 2394 (W--1653224); Killip 32582 (W--1739993); A. L. Nelson s.n. [Spring Pond, Aug. 9, 1935] (W--1683089).

ERIOCAULON PSEUDOCOMPRESSUM Ruhl.

Additional bibliography: Gomez de la Maza, *Not. Bot. Sist.* 49 & 104. 1893; Moldenke, *Phytologia* 24: 493. 1972.

ERIOCAULON SETACEUM L.

Additional bibliography: Malaisse in Lieth, Phen. & Season. Model. 283, 285, & 439. 1974; Moldenke, *Phytologia* 29: 197, 200, 221, 226--229, & 236. 1974.

ERIOCAULON SEXANGULARE L.

Additional bibliography: Moldenke, *Phytologia* 29: 200, 228--232, & 238. 1974.

Hu encountered this plant at the edge of pools of water, describing the heads as "white". Cramer 3105 is a mixture with E. truncatum Hamilt.

Additional citations: SRI LANKA: Cramer 3105, in part (W--2718369). HONGKONG: S. Y. Hu 12456 (W--2730666).

ERIOCAULON SIGMOIDEUM C. Wright

Synonymy: Eriocaulon sigmoideum Sauvalle ex Gomez de la Maza, Not. Bot. Sist. 49. 1893.

Additional bibliography: Gomez de la Maza, Not. Bot. Sist. 49 & 104. 1893; Moldenke, Phytologia 25: 76. 1972.

ERIOCAULON TRUNCATUM Hamilt.

Additional bibliography: Moldenke, Phytologia 29: 194, 208, 210, 227, & 234--236. 1974.

Cramer 3105 is a mixture with E. sexangulare L.

Additional citations: SRI LANKA: Cramer 2911 (W--2718306), 3105, in part (W--2718369).

ERIOCAULON ULAEI Ruhl.

Additional bibliography: Moldenke, Phytologia 25: 86 (1972), 28: 438 (1974), and 29: 236. 1974.

ERIOCAULON WILLDENOVIANUM Moldenke

Additional bibliography: Moldenke, Phytologia 29: 231 & 238. 1974.

Schmid-Hollinger refers to this species as "often abundant in wet places" in Sri Lanka.

Additional citations: SRI LANKA: Schmid-Hollinger 74 (W--2721316).

LACHNOCAULON Kunth

Additional bibliography: Wangerin in Just, Bot. Jahresber. 53 (2): 261. 1930; K. Jones, Taxon 9: 183. 1960; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1156 & Ind. 12. 1972; Rouleau, Taxon Index Vols. 1-20, part 1: 203. 1972; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 627. 1973; Anon., Biol. Abstr. 56 (3): B.A.S.I.C. S.28, S.89, S.144, S.147, & S.161 (1973), 56 (6): B.A.S.I.C. S.88, S.144, & S.147 (1973), and 56 (10): B.A.S.I.C. S.91, S.147, & S.149. 1973; J. Hutchinson, Fam. Flow. Pl., ed. 3, 712 & 939. 1973; R. Kral, Rhodora 75: 383--384. 1973; Moldenke, Biol. Abstr. 56: 1243, 1261, 3006, & 5374. 1973; Moldenke, Phytologia 26: 466--467, 469, & 506 (1973), 27: 509 (1974), 28: 428 & 509 (1974), and 29: 103 & 111. 1974; Hocking, Excerpt. Bot. A.23: 292. 1974; Moldenke, Biol. Abstr. 57: 678. 1974; A. L. Moldenke, Phytologia 29: 171--172 & 204. 1974.

LACHNOCAULON ANCEPS (Walt.) Morong

Additional bibliography: K. Jones, Taxon 9: 183. 1960; Rouleau, Taxon Index Vols. 1-20, part 1: 139. 1972; Moldenke, Phytologia 26: 466--467 (1973) and 29: 111. 1974; Hocking, Excerpt. Bot. A. 23: 292. 1974.

Additional citations: GEORGIA: Dodge Co.: R. Kral 28744 (W--2673943). ALABAMA: Baldwin Co.: Dress & Read 7513 (Ld). TEXAS: Hardin Co.: Cory 52778 (W--1925364). LOCALITY OF COLLECTION UNDETERMINED: Beyrich 58 [Carolina] (E--1613486).

LACHNOCAULON BEYRICHIANUM Sporleder

Additional bibliography: Moldenke, *Phytologia* 25: 91. 1972.

Kral encountered this species in bogs and at their margins in longleaf pine - turkey oak sandhills.

Additional citations: NORTH CAROLINA: Bladen Co.: R. Kral 27194 (W--2673950).

LACHNOCAULON DIGYNUM Körn.

Additional bibliography: R. Kral, *Rhodora* 75: 383. 1973; Moldenke, *Phytologia* 26: 184 (1973) and 28: 428. 1974.

Kral (1973) cites R. Kral 40960 from Conecuh County, 33835 from Escambia County, 35642 from Mobile County, and 35556 from Washington County, Alabama, collected in sandy longleaf pineland bogs, sphagnous swales and in sand-peat muck of bogs in longleaf pine sandhills, pine flatwoods bogs, and boggy bottoms, flowering and fruiting in July, September, and October. He comments that "This diminutive species, while already reported for Alabama by Moldenke.....is scarce enough in that state to be noteworthy. It ranges in the lower terraces of the coastal plain from Florida west to southern Mississippi, but is nowhere abundant." He describes the inflorescence-heads as "dull gray-brown".

Additional citations: ALABAMA: Escambia Co.: R. Kral 33835 (Mi, W--2673935).

LACHNOCAULON ENGLERI Ruhl.

Additional bibliography: Anon., *Biol. Abstr.* 56 (3): B.A.S.I.C. S.144. 1973; R. Kral, *Rhodora* 75: 383. 1973; Moldenke, *Biol. Abstr.* 56: 1243. 1973; Moldenke, *Phytologia* 26: 467. 1973.

Kral (1973) cites R. Kral 32646 from Baldwin County, Alabama, and notes that he found it in "peaty swale in slash pine - sand pine woods near estuary, Gulf Shores" in August. He says that "This species was until now known only for Florida, where it is locally abundant on sandy lakeshores, particularly in areas of karst topography." He describes the inflorescence-heads as "chocolate-brown" and found it in flower and fruit in August. Actually, I reported the Alabama extension of the range of this species on April 23, 1973, in *Phytologia* 26: 43.

Additional citations: ALABAMA: Baldwin Co.: Dress & Read 7496 (Ld); R. Kral 32646 (Mi, W--2673939).

LACHNOCAULON ENGLERI var. CAULESCENS Moldenke

Additional bibliography: Anon., *Biol. Abstr.* 56 (3): B.A.S.I.C. S.144. 1973; Moldenke, *Biol. Abstr.* 56: 1243. 1973; Moldenke, *Phytologia* 26: 43. 1973.

LACHNOCAULON FLORIDANUM Small

Additional bibliography: Moldenke, *Phytologia* 26: 43 (1973) and 29: 103. 1974.

The Buell & Godfrey 3550, distributed as L. floridanum, is actually Eriocaulon compressum Lam.

LACHNOCAULON GLABRUM Körn.

Additional bibliography: Moldenke, Phytologia 25: 92 (1972) and 29: 204. 1974.

The Pelton s.n. [July 14, 1961], distributed as L. glabrum, is actually Eriocaulon lineare Small.

LACHNOCAULON MINUS (Chapm.) Small

Additional bibliography: R. Kral, Rhodora 75: 384. 1973; Moldenke, Biol. Abstr. 56: 3006. 1973; Moldenke, Phytologia 26: 467 (1973) and 28: 428. 1974; Hocking, Excerpt. Bot. A.23: 292. 1974.

Kral (1973) cites R. Kral 39503 from Covington County and 43120 from Houston County, Alabama, found growing in sandy pond and lake shores, "tufted on moist sands in seepage around ponds, often very abundant" (Houston County, Alabama) or "infrequent on sandy peat of roadcuts through pine flatwoods bogs" (Lowndes County, Georgia). He comments that this is "A first report for Alabama for this species whose range has been thought to be in the lower coastal plain from Florida north to North Carolina."

Material has been misidentified and distributed in some herbaria as E. engleri Ruhl., a species which it often closely resembles but which may be distinguished by its chocolate-brown heads, while L. minus has dull-brown or light-brown ones.

Additional citations: GEORGIA: Lowndes Co.: R. Kral 28668 (W--2673949). FLORIDA: Volusia Co.: Curtiss 6894 (Ca--142526). ALABAMA: Covington Co.: R. Kral 39503 (W--2673940). Houston Co.: R. Kral 43120 (Mi, W--2673937).

LEIOTHRIX Ruhl.

Additional & emended bibliography: Wikstr., K. Svensk. Vet. Acad. Handl. Stockh., ser. 2, 1: 79, pl. 4. 1820; Wikstr., Trenne Nya Art. Örtal. Erioc. (repr.) [12]--[15], pl. 4. 1821; Fedde & Schust. in Just, Bot. Jahresber. 51 (1): 60 [42]. 1928; Wangerin in Just, Bot. Jahresber. 53 (2): 261. 1930; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 2: xxxiii (1970) and ed. 1, 6: 1156 & 1160--1161, map 1782, & Ind. 16. 1972; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 429, 649, & 1102. 1973; Anon., Biol. Abstr. 55 (9): B. A.S.I.C. S.144 (1973), 56 (3): B.A.S.I.C. S.89, S.144, S.147, & S. 161 (1973), 56 (6): B.A.S.I.C. S.30, S.88, S.144, S.147, S.161, & S.190 (1973), and 56 (10): B.A.S.I.C. S.91, S.147, & S.149. 1973; J. Hutchinson, Fam. Flow. Pl., ed. 3, 710 & 940. 1973; Moldenke, Biol. Abstr. 56: 1243, 1261, 3006, & 5374. 1973; Moldenke, Phytologia 26: 184--186, 197, 227, 467, 470, 471, 479, & 506 (1973), 27: 509 (1974), 28: 439, 459, & 509 (1974), and 29: 209. 1974; Hocking, Excerpt. Bot. A.23: 291 & 292. 1974; Moldenke, Biol. Abstr. 58: 680. 1974.

Airy Shaw (1973) still gives Stephanophyllum Guill. as a synonym of Paepalanthus Mart., while actually, as I have pointed out several times over the past years, it is a synonym of Leiothrix.

LEIOTHRIX AFFINIS Alv. Silv.

Additional bibliography: Moldenke, *Phytologia* 25: 94--95. 1972; Moldenke, *Biol. Abstr.* 56: 3006. 1973; Hocking, *Excerpt. Bot. A.* 23: 292. 1974.

LEIOTHRIX ARGYRODERMA var. BREVIPES Moldenke

Additional bibliography: Moldenke, *Phytologia* 25: 96 (1972) and 28: 439. 1974.

The Eitens found this plant growing in an open marshy thin humus layer of soil over a sloping rock-face at 2500 meters altitude, flowering and fruiting in November.

Additional citations: BRAZIL: Rio de Janeiro: Eiten & Eiten 6608 (W--2688327).

LEIOTHRIX CURVIFOLIA (Bong.) Ruhl.

Additional synonymy: Trichocephalus curvifolius Mart., in herb.

Additional bibliography: Moldenke, *Phytologia* 25: 97--99. 1972.

Martius 893 is a mixture of L. curvifolia, L. curvifolia var. lanuginosa (Bong.) Ruhl., and Paepalanthus pubescens Körn.

LEIOTHRIX CURVIFOLIA var. LANUGINOSA (Bong.) Ruhl.

Additional bibliography: Moldenke, *Phytologia* 26: 44. 1973.

Additional citations: MOUNTED ILLUSTRATIONS: Bong., *Mém. Acad. Imp. Sci. St. Pétersb.*, ser. 6, 2: 236--237, pl. 19 (inf.). 1832 (N, Z).

LEIOTHRIX CURVIFOLIA var. MICROPHYLIA Alv. Silv.

Additional bibliography: Moldenke, *Phytologia* 25: 129. 1973.

The Eitens found this plant growing in fields with outcropping slabs of itacolomite quartzite, at 1150 meters altitude, flowering and fruiting in November.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 36203 (N); Eiten & Eiten 6851 (W--2688353).

LEIOTHRIX CURVIFOLIA var. PLANTAGO (Mart.) Ruhl.

Additional bibliography: Moldenke, *Phytologia* 26: 44. 1973.

Additional citations: BRAZIL: Minas Gerais: Hatschbach 27354 (S); Hatschbach, Smith, & Ayensu 28797 (S).

LEIOTHRIX CURVIFOLIA var. SETACEA Ruhl.

Additional bibliography: Moldenke, *Phytologia* 26: 44. 1973.

Additional citations: BRAZIL: Minas Gerais: Hatschbach 27430 (S).

LEIOTHRIX CUSCUTOIDES Alv. Silv.

Additional bibliography: Moldenke, *Phytologia* 26: 44. 1973.

The Eitens found this plant growing on low rounded rocky outcrops in open fields, flowering in November, and describe the flowers as white.

Additional citations: BRAZIL: Minas Gerais: Eiten & Eiten 6709 (W--2688328); Hatschbach, Smith, & Ayensu 28822 (S, W--2706507).

LEIOTHRIX DIELSII Ruhl.

Additional bibliography: Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1161 & Ind. 16. 1972; Moldenke, Phytologia 25: 99. 1972.

LEIOTHRIX DISTICHOCLADA Herzog

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 60 [42]. 1928; Moldenke, Phytologia 25: 99. 1972; Moldenke, Biol. Abstr. 56: 3006. 1973; Hocking, Excerpt. Bot. A. 23: 292. 1974.

LEIOTHRIX DISTICHOCLADA var. GLANDULOSA Herzog

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 60 [42]. 1928; Moldenke, Phytologia 25: 99. 1972; Moldenke, Biol. Abstr. 56: 3006. 1973; Hocking, Excerpt. Bot. A. 23: 292. 1974.

LEIOTHRIX EDWALLII Alv. Silv.

Additional bibliography: Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1161 & Ind. 16. 1972; Moldenke, Phytologia 25: 130. 1973.

LEIOTHRIX FLAVESCENS (Bong.) Ruhl.

Additional bibliography: Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1161, map 1782, & Ind. 12 & 16. 1972; Anon., Biol. Abstr. 55 (9): B.A.S.I.C. S. 144. 1973; Moldenke, Phytologia 26: 185, 227, & 479 (1973) and 29: 209. 1974; Hocking, Excerpt. Bot. A. 23: 292. 1974.

The Rambo 56190 [Herb. Barb. Rodr. 12287], distributed as L. flavescens, is actually Eriocaulon modestum Kunth.

Additional citations: BRAZIL: Minas Gerais: Hatschbach 27346 (S). Paraná: Reitz & Klein 17908 (S).

LEIOTHRIX FLAVESCENS var. PARVIFOLIA Moldenke

Additional bibliography: Moldenke, Phytologia 25: 131 & 229. 1973; Anon., Biol. Abstr. 55 (9): B.A.S.I.C. S. 144. 1973; Hocking, Excerpt. Bot. A. 23: 292. 1974.

Reitz & Klein encountered this plant on a wet campo at 900 meters altitude.

Additional citations: BRAZIL: Minas Gerais: Irwin, Harley, & Onishi 28946 (N--isotype). Santa Catarina: Reitz & Klein 10290 (Id).

LEIOTHRIX FLUITANS (Mart.) Ruhl.

Additional bibliography: Moldenke, Phytologia 26: 45. 1973.

Citations: MOUNTED ILLUSTRATIONS: Körn. in Mart., Fl. Bras. 3 (1): pl. 53 I. 1863 (N, Z).

LEIOTHRIX FLUMINENSIS Ruhl.

Additional bibliography: Moldenke, Phytologia 26: 45 (1973) and

28: 439 & 459. 1974.

LEIOTHRIX FLUMINENSIS var. PUBERULA Moldenke

Synonymy: Leiothrix fluminensis var. pilosa Moldenke, *Phytologia* 28: 459, in syn. 1974.

Additional bibliography: Moldenke, *Phytologia* 25: 132 (1973) and 28: 439 & 459. 1974.

The label accompanying the Guillemin collection, cited below, is plainly inscribed as no. "139", while on the type specimen it has been altered to "239" for some reason unknown to me. It is very probable that the specimen cited below as "139" is part of the same type collection of this variety. Guillemin collected in the state of Rio de Janeiro at least from October 19, 1838, to January 15, 1839, and from February 18, 1839, to May 26, 1839, and in São Paulo only from January 19, 1839, to February 18, 1839. The typical form of the species is known only from Rio de Janeiro, so it seems safe to assume that the type of the variety is also from that state.

Additional citations: BRAZIL: Rio de Janeiro: Guillemin 139 (E-1642249).

LEIOTHRIX HATSCHBACHII Moldenke, *Phytologia* 25: 229, nom. nud. 1973.

Bibliography: Moldenke, *Phytologia* 25: 229. 1973; Moldenke, *Biol. Abstr.* 58: 680. 1974.

Citations: BRAZIL: Minas Gerais: Hatschbach 30165 (Z-type).

LEIOTHRIX HIRSUTA (Wikstr.) Ruhl.

Additional & emended bibliography: Wikstr., *K. Vet. Acad. Handl. Stockh.*, ser. 2, 1: 79-81, pl. 4. 1820; Wikstr., *Trenne Nya Art. Örtsl. Eric.* (repr.) 12-[15], pl. 4. 1821; Anon., *Biol. Abstr.* 56 (3): B.A.S.I.C. S.147. 1973; Moldenke, *Biol. Anstr.* 56: 1243. 1973; Moldenke, *Phytologia* 25: 132-133 (1973) and 26: 470 & 471. 1973; Hocking, *Excerpt. Bot. A.23*: 291. 1974.

Additional illustrations: Wikstr., *K. Vet. Acad. Handl. Stockh.*, ser. 2, 1: pl. 4. 1820; Wikstr., *Trenne Nya Art. Örtsl. Eric.* (repr.) pl. 4. 1821.

Belém & Pinheiro, on the labels accompanying their specimens, describe the plants as 15-35 cm. tall, but it seems obvious that it is the length of the leaves to which they are here referring, because the flowering peduncles on the specimens described as 15 cm. tall are actually 47 cm. tall! They describe the inflorescences as "white" and found the plants in flower in June.

Additional citations: BRAZIL: Bahia: Belém & Pinheiro 2432 (N), 2439 (N).

LEIOTHRIX HIRSUTA f. VIVIPARA Moldenke

Additional bibliography: Anon., *Biol. Abstr.* 56 (3): B.A.S.I.C. S.147. 1973; Moldenke, *Biol. Abstr.* 56: 1243. 1973; Moldenke, *Phytologia* 25: 133. 1973; Hocking, *Excerpt. Bot. A.23*: 291. 1974.

LEIOTHRIX LUXURIANS (Körn.) Ruhl.

Additional bibliography: Moldenke, *Phytologia* 26: 185. 1973.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 35480 (N); Hatschbach 30065 (N). MOUNTED ILLUSTRATIONS: Körn. in *Mart.*, *Fl. Bras.* 3 (1): pl. 54. 1863 (N, Z).

LEIOTHRIX MUCRONATA (Bong.) Ruhl.

Additional bibliography: Moldenke, *Phytologia* 25: 134. 1973.

Additional citations: MOUNTED ILLUSTRATIONS: Bong., *Mém. Acad. Imp. Sci. St. Pétersb.*, ser. 6, 2: 234--235, pl. 19 (sup.). 1832 (N, Z).

LEIOTHRIX NUBIGENA (Kunth) Ruhl

Additional bibliography: Moldenke, *Phytologia* 25: 134 (1973) and 26: 197. 1973.

Additional citations: MOUNTED ILLUSTRATIONS: Körn. in *Mart.*, *Fl. Bras.* 3 (1): pl. 55 II. 1863 (N, Z).

LEIOTHRIX PEDUNCULOSA Ruhl.

Additional bibliography: Angely, *Fl. Anal. & Fitogeogr. Est. S. Paulo*, ed. 1, 6: 1161 & Ind. 16. 1972; Moldenke, *Phytologia* 26: 185. 1973.

Angely (1970) misspells Ruhland's surname "Rugland", doubtless a typographic error.

LEIOTHRIX PILULIFERA (Körn.) Ruhl.

Additional bibliography: Moldenke, *Phytologia* 25: 135. 1973.

Additional citations: MOUNTED ILLUSTRATIONS: Körn. in *Mart.*, *Fl. Bras.* 3 (1): pl. 55 I. 1863 (N, Z).

LEIOTHRIX SCLEROPHYLLA Alv. Silv.

Additional bibliography: Moldenke, *Phytologia* 26: 467. 1973.

Additional citations: BRAZIL: Minas Gerais: Hatschbach & Ahumada 31589 (N).

LEIOTHRIX TINGUENSIS Herzog

Additional bibliography: Fedde & Schust. in *Just*, *Bot. Jahresber.* 53 (1): 60 [52]. 1928; Moldenke, *Phytologia* 25: 137. 1973.

LEIOTHRIX VIVIPARA var. ANGUSTA Ruhl.

Additional bibliography: Moldenke, *Phytologia* 25: 138. 1973.

Additional citations: BRAZIL: Minas Gerais: Hatschbach 27489 (S, W--2706784).

MESANTHEMUM Körn.

Additional synonymy: Mesanthum Metcalfe, *Taxon* 1: 130. 1951.

Additional & amended bibliography: Anon., *Journ. Linn. Soc. Lond. Bot.* 20: 522. 1884; Durand & Schinz, *Consp. Fl. Afr.* 5: 504. 1894; Engl., *Pflanzenw. Ost-Afr. C*: 133. 1895; N. E. Br. in *Thiselt.-Dyer*, *Fl. Trop. Afr.* 8: 231 & 260--262. 1901; Malmanche, *Contrib. Étud. Anatom. Eriocaul.* [thesis] 159. 1919; Kräusel in *Just*, *Bot. Jahres-*

ber. 43 (1): 244. 1926; Pellegr., Mém. Soc. Linn. Normand. 26 [ser. 2, 1 (4)]: 58. 1938; Pellegr., Fl. Mayombe 3: 58. 1938; Metcalfe, Taxon 1: 130. 1951; Rouleau, Taxon Index Vols. 1-20 part 1: 231. 1972; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 440, 735, & 737. 1973; Anon., Biol. Abstr. 56 (3): B.A.S.I.C. S.144, S.147, & S.161 (1973), 56 (6): B.A.S.I.C. S.147, S.161, & S.190 (1973), and 56 (10: B.A.S.I.C. S.147 & S.149. 1973; J. Hutchinson, Fam. Flow. Pl., ed. 3, 710 & 944. 1973; Moldenke, Biol. Abstr. 56: 1261, 3007, & 5374. 1973; Moldenke, Phytologia 26: 467-468 & 507 (1973) and 28: 441, 460, & 510. 1974; Moldenke, Biol. Abstr. 57: 678. 1974.

MESANTHEMUM PRESCOTTIANUM (Bong.) Körn.

Additional & emended bibliography: Durand & Schinz, Consp. Fl. Afr. 5: 504. 1894; N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 260-262. 1901; Moldenke, Phytologia 26: 467-468. 1973.

Brown (1901) cites only the type collection - "Sierra Leone, without indication of the collector!" and comments that "Bongard states that this plant is a native of Rio de Janeiro, but upon what authority does not appear. He described it from a specimen in the herbarium of Prescott, which was received from Lindley. The Kew example (also received from Lindley), is labelled 'Sierra Leone', which is much more likely to be the right habitat than Brazil, since the other species of Mesanthemum are all from Tropical Africa and Madagascar. However, as the plant appears not to have been collected again, the locality requires confirmation."

Additional citations: MOUNTED ILLUSTRATIONS: Körn. in Mart., Fl. Bras. 3 (1): pl. 60 I. 1863 (N, Z).

MESANTHEMUM PUBESCENS (Lam.) Körn.

Additional bibliography: Anon., Journ. Linn. Soc. Lond. Bot. 20: 522. 1884; Durand & Schinz, Consp. Fl. Afr. 5: 504. 1894; Perrier de la Bâthie, Cat. Pl. Madag. 22. 1934; Moldenke, Phytologia 25: 440 & 441. 1973.

MESANTHEMUM RADICANS (Benth.) Körn.

Additional & emended bibliography: Durand & Schinz, Consp. Fl. Afr. 5: 504. 1894; Engl., Pflanzenw. Ost-Afr. C: 133. 1895; N. E. Br. in Thiselt.-Dyer, Fl. Trop. Afr. 8: 260-261. 1901; Pellegr., Mém. Soc. Linn. Normand. 26 [ser. 2, 1 (4)]: 58. 1938; Pellegr., Fl. Mayombe 3: 58. 1938; Moldenke, Phytologia 26: 468 (1973) and 28: 441. 1974.

Pellegrini (1938) found this plant on a "Plaine sablonneuse, à 50 m. de la mer", flowering in January, and cites "L. T. 966".

Brown (1901) cites Perrottet 8-8 from Sénégal, Azelius s.n., Don s.n., Hart s.n., Scott-Elliott 3994, and Smethman s.n. from Sierra Leone, Ansell s.n. from Liberia, Barter 20211 & 20219, Kalbreyer 245, Milson s.n., and Robb s.n. from Nigeria, Milne s.n. from Fernando Po, Jardin s.n. from Gabun, Soyaux s.n. from French Congo, Büttner s.n. and Smith s.n. from Zaire, and Curror

s.n. from Angola. He comments that "The female flowers of this plant are somewhat variable; in some specimens the sepals are only about 1/3 as long as the corolla, in others about half as long, whilst in Kalbreyer 245 they are 3/4 as long; in most examples they are simply denticulate at the apex, but in others they are distinctly ciliate, these two extremes, however, are connected by forms in which the ciliation is represented by one or two hairs only. But I do not consider these differences of specific or even varietal importance in the case of this plant, for in all other characters the plant is fairly uniform. This species was unfortunately included in the Flora Capensis before I had discovered that all Curror's plants (which are labelled 'South of the Tropic') were collected in Angola."

Durand & Schinz (1894) record this species from "Niger" [Niger Republic?]. Mrs. Richards found it growing in very wet grass and swamp land.

Additional citations: ZAMBIA: Mrs. M. Richards s.n. [19.1. 1960] (E-1767815).

MESANTHEMUM RUTENBERGIANUM Körn.

Additional bibliography: Anon., Journ. Linn. Soc. Lond. Bot. 20: 522. 1884; Durand & Schinz, Consp. Fl. Afr. 5: 504. 1894; Perrier de la Bâthie, Cat. Pl. Madag. 22. 1934; Moldenke, Phytologia 26: 46. 1973.

PAEPALANTHUS Mart.

Additional & emended bibliography: Wikstr., K. Svensk. Vet. Akad. Handl. Stockh., ser. 2, 1: 76, pl. 3. 1820; Wikstr., Trenne Nya Art. Örtsl. Erioc. (repr.) 9-11, 14, & [15], pl. 3. 1821; Mart., Erioc. Selbst. Pflanzenfam. 12-15, 23, 27, 42, 57, & 60, pl. 1 [I], fig. 1-6, & pl. 2 [I], fig. 1-7. 1833; Gomez de la Maza, Not. Bot. Sist. 49 & 110. 1893; Durand & Schinz, Consp. Fl. Afr. 5: 504. 1894; N. E. Br. in Thaiselt.-Dyer, Fl. Trop. Afr. 8: 231 & 262-264. 1901; Malmanche, Contrib. Étud. Anatom. Eriocaul. [thesis]. 1919; Kräusel in Just, Bot. Jahresber. 48 (1): 244. 1926; Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 60-61 [42-43]. 1928; Wangerin in Just, Bot. Jahresber. 53 (2): 261. 1930; León, Fl. Cuba 1: 279 & 281. 1946; Metcalfe, Taxon 1: 130. 1951; Moldenke in R. E. Schult., Bot. Mus. Leaflet. Harvard Univ. 17: 66. 1955; R. C. Foster, Contrib. Gray Herb. 184: 39. 1958; Braga, Pl. Nordest., ed. 2, 20. 1960; Angely, Fl. Anal. & Fito-geogr. Est. S. Paulo, ed. 1, 2: xxxiii (1970) and ed. 1, 6: 1156-1164, maps 1777-1781, & Ind. 20-21. 1972; Rouleau, Taxon Index Vols. 1-20 part 1: 271. 1972; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 258, 394, 429, 673, 842, & 1102. 1973; Anon., Biol. Abstr. 56 (3): B.A.S.I.C. S.147 & S.161 (1973), 56 (6): B. A.S.I.C. S.88, S.147, S.161, S.190, S.256, & S.279 (1973), 56 (9): B.A.S.I.C. S.93 & S.199 (1973), and 56 (10): B.A.S.I.C. S.149. 1973; J. Hutchinson, Fam. Flow. Pl., ed. 3, 710, [711], & 949, fig. 364. 1973; Moldenke, Biol. Abstr. 56: 1261, 3000, 3007, 4784, 5374, & 7484. 1973; Thorne in Meggers, Ayensu, & Duckworth, Trop.

For. Ecosyst. Afr. & S. Am. 29, 33, & 36. 1973; Moldenke, Phytologia 26: 455, 460, 468—484, 503, 504, & 508 (1973), 27: 67—69, fig. 2 (1973), 27: 510 (1974), 28: 193—194, 432, 435, 436, 439, 440, 456, 460, 461, 466, 467, & 510 (1974), and 29: 76—78, 192, 208, 209, & 211. 1974; Anon., Biol. Abstr. 57 (2): B.A.S.I.C. E. 94. 1974; Hocking, Excerpt. Bot. A.23: 290—292. 1974; Moldenke, Biol. Abstr. 57: 678 & 679. 1974.

Thorne (1973) asserts that there are 485 species in this genus, of which 484 are American, 2 are African, and 1 is from Madagascar.

It is interesting to note that Airy Shaw (1973) still maintains the genus Stephanophyllum Guill. as a synonym of Paepalanthus, when actually, as I have previously pointed out several times over the past years, it is congeneric with Leiothrix Ruhl. and antedates that name.

The Murça Pires 422, distributed as Paepalanthus sp., is actually Syngonanthus paraënsis Ruhl., Murça Pires 737 is S. simplex (Miq.) Ruhl., and R. Espinosa E.988 is not eriocaulaceous.

PAEPALANTHUS ACANTHOPHYLLUS Ruhl.

Additional bibliography: Moldenke, Phytologia 26: 468. 1973.

Lützelburg reports that this species constitutes about 10 percent of the vegetation at 1600—1700 meters altitude on the Serra Itubira, in Bahia, where he found it in flower and fruit in August.

Material has been misidentified and distributed in some herbaria as P. amoenus (Bong.) Körn. On the other hand, the Irwin, Grear, Souza, & Reis dos Santos 14300 and Murça Pires, Grear, Souza, & Reis dos Santos 14300, distributed as P. acanthophyllum, are actually P. cordatus Ruhl., Irwin, Souza, Grear, & Reis dos Santos 17860 is P. speciosus (Bong.) Körn., and Glaziou 19977, Hatschbach 29948, Mello Barreto 2487 [Herb. Jard. Bot. Belo Horiz. 8236 & 8237], and L. B. Smith 7075 are P. urbanianus Ruhl.

Additional citations: BRAZIL: Bahia: Lützelburg 216a (Mu), 216b (Mu). Goiás: Irwin, Harley, & Smith 32704 (N); Irwin, Reis dos Santos, Souza, & Fonseca 24649 (N). Minas Gerais: Anderson, Stieber, & Kirkbride 35857 (N, W--2709829).

PAEPALANTHUS ACUTIPILUS Alv. Silv.

Additional bibliography: Moldenke, Phytologia 26: 187 & 192. 1973.

Additional citations: BRAZIL: Minas Gerais: Irwin, Harley, & Onishi 30224 (N); Koczicki 303 (Id).

PAEPALANTHUS AEQUALIS (Vell.) J. F. Macbr.

Additional bibliography: Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1157 & Ind. 20. 1972; Moldenke, Phytologia 26: 47, 471, & 484. 1973.

In addition to the months previously reported by me, this species has been collected in anthesis and fruit in January.

Additional citations: BRAZIL: Minas Gerais: Widgren s.n. [1845] (Mu). São Paulo: Brade 6584 (Mu). MOUNTED ILLUSTRATIONS: Körn. in Mart., Fl. Bras. 3 (1): pl. 48 III. 1863 (N, Z).

PAEPALANTHUS ALBO-TOMENTOSUS Herzog

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 60 [42]. 1928; Moldenke, Phytologia 25: 146. 1973.

Additional citations: BRAZIL: Bahia: Lützelburg 279 [Macbride photos 18692] (Mu—cotype), 488 (Mu—cotype, Z—cotype).

PAEPALANTHUS ALBO-VAGINATUS Alv. Silv.

Additional bibliography: Moldenke, Phytologia 26: 187. 1973.

Recent collectors describe this plant as an "erva, flôr branca" or "flôr cinzeta" and have encountered it in sandy somewhat wet soil on campos or on "campo limpo", at altitudes of 750 to 1400 meters, flowering in September, October, December, and January, and fruiting in October.

Additional citations: BRAZIL: Paraná: Hatschbach 24712 (S), 32963 (N). Santa Catarina: Klein 3802 (Ld); Reitz & Klein 4781 (Ld), 5300 (Rd), 6063 (Ac).

PAEPALANTHUS ALPINUS Körn.

Additional bibliography: Moldenke, Phytologia 26: 468 & 480. 1973.

Barclay and his associates refer to this plant as a caespitose perennial from a thick taproot, the leaves in a rosette, and the flowers white. They found it to be common in marshy areas of the páramo zone. Schultes and his associates encountered it on wet roadside banks, flowering and fruiting in June, the flowers again described as white.

Additional citations: COLOMBIA: Cundinamarca: Barclay, Juajibioy, & Gama 3223 (W—2702256); Humbert, Idrobo, Jaramillo, Perez Arbelaez, & Uribe Uribe 26896 (P); Schultes, Martin, & Plowman 13 (W—2711065).

PAEPALANTHUS ALSINOIDES C. Wright

Additional synonymy: Paepalanthus alsinoides Sauvalle ex Gomez de la Maza, Not. Bot. Sist. 49. 1893.

Additional bibliography: Gomez de la Maza, Not. Bot. Sist. 49 & 110. 1893; León, Fl. Cuba 1: 283. 1946; Moldenke, Phytologia 25: 146. 1973.

PAEPALANTHUS ALSINOIDES var. MINIMUS Jennings

Additional bibliography: León, Fl. Cuba 1: 283. 1946; Moldenke, Phytologia 25: 146. 1973.

Additional citations: ISLA DE PINOS: Killip 42879 (S), 45147 (Mu), 45388 (Mu).

PAEPALANTHUS AMOENUS (Bong.) Körn.

Additional synonymy: Paepalanthus fenziianus Mart., in herb.

[not P. fenzlianus Körn., 1959].

Additional bibliography: Moldenke, *Phytologia* 26: 187 & 481 (1973) and 28: 439. 1974.

The P. fenzlianus accredited to Körnicke, referred to in the synonymy above, is a synonym of the very similar P. speciosus (Bong.) Körn.

The Irwin, Reis dos Santos, Souza, & Fonséca 24649, distributed as P. amoenus, is actually P. acanthophyllus Ruhl.; Irwin, Grear, Souza, & Reis dos Santos 13588 & 14300 are P. cordatus Ruhl.; Irwin, Souza, Grear, & Reis dos Santos 17860 is P. speciosus (Bong.) Körn.; Héringer 7887/81, Irwin, Souza, & Reis dos Santos 11580 & 11670, Maguire, Maguire, & Murça Pires 44790, and Philcox & Onishi 4892 are P. speciosus var. attenuatus Moldenke; Claussen s.n., Irwin, Grear, Souza, & Reis dos Santos 12358, 13925, & 15375, and Irwin, Maxwell, & Wasshausen 20239 are P. speciosus var. glaber Ruhl.; and Glaziou 19977, Héringer 10431, and Irwin, Harley, & Smith 32034 are P. urbanianus Ruhl.

Additional citations: BRAZIL: Minas Gerais: Martius 878 [N. Y. Bot. Gard. type photo neg. N.S. 8852] (Mu, Mu, N--photo, Z--photo). MOUNTED ILLUSTRATIONS: Körn. in *Mart., Fl. Bras.* 3 (1): pl. 42 (N, Z).

PAEPALANTHUS ANDICOLA Körn.

Additional bibliography: Moldenke, *Phytologia* 25: 147 (1973) and 26: 480. 1973.

PAEPALANTHUS APPLANATUS Ruhl.

Additional bibliography: Moldenke, *Phytologia* 25: 148. 1973.

Material of this species has been misidentified and distributed in some herbaria as P. speciosus (Bong.) Körn.

Additional citations: BRAZIL: Minas Gerais: Glaziou 19973 [Macbride photos 10570] (C--isotype).

PAEPALANTHUS ARGENTEUS (Bong.) Körn.

Additional bibliography: Moldenke, *Phytologia* 26: 47 & 254. 1973.

Anderson describes this plant as having a "short trunk" and found it growing on a rocky slope at an altitude of 1250 meters in an area of "gallery forest along stream and slopes above, one side being rocky (quartzite) with sandy soil, the other side having an area of grass cerrado on red clay."

Additional citations: BRAZIL: Minas Gerais: W. R. Anderson 8566 (Ld); Hatschbach 27403 (S).

PAEPALANTHUS ARGILLICOLA Alv. Silv.

Additional bibliography: Moldenke, *Phytologia* 26: 468. 1973; Hocking, *Excerpt. Bot. A.* 23: 291. 1974.

PAEPALANTHUS ARGILLICOLA var. PILOSUS Moldenke

Additional bibliography: Moldenke, *Phytologia* 25: 149 & 229. 1973; Moldenke, *Biol. Abstr.* 55: 4242. 1973; Hocking, *Excerpt. Bot. A.* 23: 291. 1974.

PAEPALANTHUS ARMERIA Mart.

Additional bibliography: Moldenke, *Phytologia* 26: 468—469. 1973.

Additional citations: BRAZIL: Goiás: J. E. Pohl s.n. [Chapada de S. Marcos; Macbride photos 18693] (Mu—type, Z—isotype).

PAEPALANTHUS ASPER Alv. Silv.

Additional bibliography: Moldenke, *Biol. Abstr.* 56: 4784 & 7484. 1973; Moldenke, *Phytologia* 26: 136. 1973.

PAEPALANTHUS ATER Alv. Silv.

Additional bibliography: Moldenke, *Phytologia* 26: 136 & 235. 1973.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 35763 (N).

PAEPALANTHUS AUYANTEPUIENSIS Moldenke

Additional bibliography: Moldenke, *Phytologia* 25: 150. 1973.

Additional citations: VENEZUELA: Bolívar: J. A. Steyermark 93957 (Mu).

PAEPALANTHUS BAHIENSIS (Bong.) Kunth

Additional bibliography: Moldenke, *Phytologia* 25: 151 (1973) and 26: 202, 228, 234, & 242. 1973.

PAEPALANTHUS BARBIGER Alv. Silv.

Additional bibliography: Moldenke, *Phytologia* 26: 136 & 235. 1973.

The Eitens found this plant growing in fine light-gray sand with some humus and also on hillsides with small stones and gravel, flowering and fruiting in November.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 35299 (N, W—2709803), 35420 (N, W—2709802); Eiten & Eiten 6793 (W—2688329), 6894 (N, W—2687695).

PAEPALANTHUS BARBULATUS Herzog

Additional bibliography: Fedde & Schust. in *Just, Bot. Jahresber.* 53 (1): 60 [42]. 1928; Moldenke, *Phytologia* 25: 151—152 (1973) and 26: 241 & 242. 1973.

Additional citations: BRAZIL: Bahia: Lützelburg 212 [Macbride photos 18694] (Mu—cotype, Z—cotype), 212aI (Mu—cotype), 212aII (Mu—cotype).

PAEPALANTHUS BATOCEPHALUS Ruhl.

Additional bibliography: Angely, *Fl. Anal. & Fitogeogr. Est. S. Paulo*, ed. 1, 6: 1157 & Ind. 20. 1972; Moldenke, *Phytologia* 25:

152. 1973.

PAEPALANTHUS BELIZENSIS Moldenke, *Phytologia* 27: 67--68, fig. 2. 1973.

Bibliography: Moldenke, *Phytologia* 27: 67--68, fig. 2 (1973) and 28: 432. 1974.

Illustrations: Moldenke, *Phytologia* 27: 68, fig. 2. 1973.

Citations: BRITISH HONDURAS: McKee 11373 (N--photo of type, W--2644489--type, Z--photo of type).

PAEPALANTHUS BIFIDUS (Schrad.) Kunth

Additional synonymy: Eriocaulon fasciculatum L., in herb.

Additional bibliography: Moldenke, *Phytologia* 26: 469 (1973) and 29: 76. 1974.

The Eriocaulon pygmaeum Mart., E. (Paepalanthus) pygmaeum Mart., and Paepalanthus fasciculatus f. pygmaea Körn., previously included in the synonymy of P. bifidus, should now be shifted to the synonymy of P. bifidus f. frustus Moldenke.

The G. Gardner 1170 collection, cited below, is a mixture with P. lamarckii Kunth. The Blanchet 470 & 2599, Essed s.n. [Sept. 1914], Lützelburg 7239, Maguire & Fanshawe 32204, Martius 555, Mexia 5816, Murça Pires, Black, Wurdack, & Silva 6161, Pickel 734, L. Riedel s.n. [Bahia, 1859], Schwacke 8494 [Herb. Jard. Bot. Belo Horiz. 26668], and J. A. Steyermark 89671, distributed and previously cited by me as typical P. bifidus, are actually all f. brevipes Moldenke, while Martius 558 is the type collection of f. frustus Moldenke.

Prance and his associates found P. bifidus growing on white sand in disturbed caatinga.

Additional citations: BRAZIL: Amazonas: Prance, Coêlho, Maas, & Pinheiro 11658 (Mu, Mu, N, S); Prance, Ramos, Farias, & Philcox 4835 (S). Pará: Spruce 108 (Mu). Rio Grande do Norte: Tavares 422 (W--2692382). State undetermined: G. Gardner 1170, in part (N).

PAEPALANTHUS BIFIDUS f. BREVIPES Moldenke, *Phytologia* 29: 76. 1974.

Bibliography: Moldenke, *Phytologia* 29: 76. 1974.

This form differs from the typical form of the species in having its peduncles during full anthesis and/or fruit only 1--3 cm. in length.

Collectors have found this plant growing in dry sandy places, in sandy soil among rocks, in dry sandy or gravelly places in general, and in dry soil, at altitudes of 300--1250 meters, flowering in May and both flowering and fruiting in April, September, October, and December. They describe it as an herb with "brownish-white" flowers. Maguire & Fanshawe refer to it as a "locally common weedy annual about rest house" in Guyana; Mexia also refers to it as "common locally".

Some specimens on the Munich sheet of Lützelburg 7239 approach

f. frustus in appearance, but probably are merely immature.

Material of f. brevipes has been misidentified and distributed in herbaria under the names Eriocaulon congestum H.B.K., E. fasciculatum Lam., E. villosum Salzm., Paepalanthus bifidus Kunth, and P. bifidus (Schrad.) Kunth.

Citations: VENEZUELA: Bolívar: J. A. Steyermark 89671 (Mi, N). GUYANA: Maguire & Fanshawe 32204 (Mu, N). SURINAM: Essed s.n. [Sept. 1914] (N, Ut--44076a). BRAZIL: Bahia: Blanchet 470 (N), 2599 (M); L. Riedel s.n. [Bahia, 1859] (N), s.n. (Br); Sellow 565 (Br, Br, N--photo, Z--photo). Espirito Santo: Lützelburg 7239 (Mu). Minas Gerais: Martius 555 (N); Mexia 5816 [Herb. Leonard 8345] (B--isotype, Gg--286100--isotype, Go--isotype, Mi--isotype, N--type, Qu--isotype, S--isotype, Ut--50247a--isotype, W--1571893--isotype); Schwacke 8494 [Herb. Jard. Bot. Belo Horiz. 26668] (N). Pará: Murça Pires, Black, Wurdack, & Silva 6161 (N). Pernambuco: Pickel 734 (N).

PAEPALANTHUS BIFIDUS f. FRUSTUS Moldenke, Phytologia 29: 76. 1974.

Synonymy: Eriocaulon pygmaeum Mart., Flora 24, Beibl. 2: 60. 1841 [not E. pygmaeum Dalz., 1851, nor Körn., 1863, nor Soland., 1809]. Eriocaulon (Paepalanthus) pygmaeum Mart. ex Moldenke, Phytologia 20: 414, in syn. 1970. Paepalanthus fasciculatus f. pygmaea Körn. ex Moldenke, Phytologia 20: 415, in syn. 1970. Eriocaulon (Paepalanthus) pygmaeus Mart. ex Moldenke, Phytologia 25: 240, in syn. 1973.

Bibliography: Mart., Flora 24, Beibl. 2: 60. 1841; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 879. 1893; Ruhl. in Engl., Pflanzenreich 13 (4-30): 153 & 287. 1903; Moldenke, Résumé 291. 1959; Moldenke, Phytologia 20: 414 & 415. 1970; Moldenke, Fifth Summ. 2: 509 & 582. 1971; Moldenke, Phytologia 25: 240 (1973) and 29: 76. 1974.

The type of this interesting form was collected by Bernhard Luschnath (no. 32) "in campis maritimis prope Caballo", Bahia, Brazil, and is deposited in the Munich herbarium. The plant was apparently in flowering and fruiting stage in August. The form is known only from this original collection of thirteen plants and the recent gathering by Irwin and his associates in Goiás, who describe it as a cushion herb with white flowers and found it in pastures at 800 meters altitude, flowering in April. Some plants on Lützelburg 7239, from Espirito Santo, approach it in habit and appearance, but are probably only immature specimens of f. brevipes.

Citations: BRAZIL: Bahia: Luschnath 32 [Martius 558] (Br--isotype, Br--isotype, M--isotype, Mu--type, N--photo of isotype, Z--photo of isotype). Goiás: Irwin, Grear, Souza, & Reis dos Santos 14480 (N).

PAEPALANTHUS BIFRONS Alv. Silv.

Additional bibliography: Moldenke, *Phytologia* 26: 137. 1973.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 36250 (N).

PAEPALANTHUS BLEPHAROPHORUS (Bong.) Kunth

Additional bibliography: Moldenke, *Phytologia* 25: 153 (1973) and 26: 484. 1973.

Additional citations: MOUNTED ILLUSTRATIONS: Bong., *Mém. Acad. Imp. Sci. St. Pétersb.*, ser. 6, 2: 229--231, pl. 16. 1832 (N, Z).

PAEPALANTHUS BOMBACINUS Alv. Silv.

Additional bibliography: Moldenke, *Phytologia* 26: 137 & 235. 1973.

Anderson refers to this species as an herb and encountered it "in wet sand in area of gallery forest along stream and slopes above, one side being rocky (quartzite) with sandy soil, and the other side having an area of grassy cerrado on red clay", at 1250 meters altitude.

Additional citations: BRAZIL: Minas Gerais: W. R. Anderson 8587 (Ld); Anderson, Stieber, & Kirkbride 36232 (N); Williams & Assis 2926 (E--1309480).

PAEPALANTHUS BONJARDI Kunth

Additional bibliography: Angely, *Fl. Anal. & Fitogeogr. Est. S. Paulo*, ed. 1, 6: 1158 & Ind. 20. 1972; Moldenke, *Phytologia* 25: 153 (1973) and 26: 442. 1973.

Additional citations: MOUNTED ILLUSTRATIONS: Bong., *Mém. Acad. Imp. Sci. St. Pétersb.*, ser. 6, 1: pl. 7. 1831 (N, Z).

PAEPALANTHUS BRACHYPUS (Bong.) Kunth

Additional bibliography: Moldenke, *Phytologia* 26: 469. 1973.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 35418a (N). MOUNTED ILLUSTRATIONS: Bong., *Mém. Acad. Imp. Sci. St. Pétersb.*, ser. 6, 1: pl. 6. 1831 (N, Z).

PAEPALANTHUS BRASILIENSIS (Mart.) Mart.

Additional bibliography: Moldenke, *Phytologia* 25: 154--155 (1973) and 26: 202. 1973.

Additional citations: BRAZIL: Minas Gerais: Martius s.n. [prope Arraial d'Agua Suja, Junio 1813; Macbride photos 18695] (Mu--type, Z--isotype). MOUNTED ILLUSTRATIONS: Körn. in *Mart., Fl. Bras.* 3 (1): pl. 44 I. 1863 (N, Z).

PAEPALANTHUS BRITTONI Moldenke

Additional bibliography: León, *Fl. Cuba* 1: 282 & 283, fig. 113. 1946; Moldenke, *Phytologia* 25: 156--157. 1973.

Illustrations: León, *Fl. Cuba* 1: 282, fig. 113. 1946.

PAEPALANTHUS BROMELIOIDES Alv. Silv.

Additional bibliography: Moldenke, *Phytologia* 26: 137--138, 443,

& 240. 1973.

The Irwin, Harley, & Onishi 29030, distributed as P. bromelioides and so cited by me in a previous installment of these notes, appears to represent P. vellozioides Körn. instead, while Irwin, Harley, & Onishi 30225 is P. corymbosus (Bong.) Kunth.

PAEPALANTHUS BRUNNEUS Moldenke

Additional bibliography: Moldenke, *Phytologia* 25: 158—159. 1973.

Additional citations: GUYANA: Cowan & Soderstrom 2153 (N).

PAEPALANTHUS BRYOIDES (Riedel) Kunth

Additional bibliography: Moldenke, *Phytologia* 25: 159—161 (1973) and 28: 439. 1974.

Anderson encountered this species at an altitude of 1400 meters on a "shaded ledge under overhang on steep rocky (quartzite) hillside sloping down to gallery forest with seeps and sedge meadows just above the forest", flowering in April.

The Anderson, Stieber, & Kirkbride 36092, distributed by the New York Botanical Garden as "Paepalanthus bryoides (Riedel) Kunth Det. H. Moldenke, 1972" is actually P. vellozioides Körn. The erroneous statement on its accompanying labels doubtless has resulted from an error in transcription by the typist, since I did not so report the identification!

Additional citations: BRAZIL: Minas Gerais: W. R. Anderson 8471 (Ld); Anderson, Stieber, & Kirkbride 35232 (N, W—2709820), 35643 (N, W—2709819); Hatschbach 27447 (S, W—2706783). Paraná: Hatschbach 33472 (Ld). MOUNTED ILLUSTRATIONS: Bong., *Mém. Acad. Imp. Sci. St. Pétersb.*, ser. 6, 1: pl. 10 (sup.). 1831 (N, Z).

PAEPALANTHUS CAESPITITIUS Mart.

Additional bibliography: Moldenke, *Phytologia* 26: 138. 1973.

Additional citations: BRAZIL: Minas Gerais: Martius 1082 [Macbride photos 10577] (Mu--cotype).

PAEPALANTHUS CALDENSIS Malme

Additional bibliography: Angely, *Fl. Anal. & Fitogeogr. Est. S. Paulo*, ed. 1, 6: 1158, map 1777, & *Ind.* 20. 1972; Moldenke, *Phytologia* 26: 469. 1973.

Recent collectors describe this plant as an "erva, 0.05 m. alt., flôr branca" and have encountered it in "banhado de campo" at altitudes of 750 to 1300 meters, flowering in November and December.

The photograph of Ule 1620, cited below, represents a specimen deposited in the herbarium of the Staatsinstitut für Allgemeine Botanik in Hamburg which has been seen and annotated by me.

Additional citations: BRAZIL: Paraná: Braga 1503 (Rd—26164); Hatschbach 32759 (Gz). Rio Grande do Sul: K. Emrich 56915 (Rd—12285); Rambo 56442 (Rd—12284). Santa Catarina: Klein 3321 (Ld), 3406 (Ld), 3494 (Ld), 3876 (Ld), 4470 (Ld); Reitz 6658 (Ac);

Reitz & Klein 7705 (Ac), 7903 (Ld), 7918 (Ac), 14124 (Ld); Ule 1620 (Z--photo).

PAEPALANTHUS CALVUS Körn.

Additional bibliography: Moldenke, *Phytologia* 26: 141--142. 1973.

Additional citations: BRAZIL: Minas Gerais: Irwin, Harley, & Onishi 28748 (N).

PAEPALANTHUS CANESCENS (Bong.) Körn.

Additional bibliography: Moldenke, *Phytologia* 26: 469 (1973) and 29: 192. 1974.

Examination of authentic material of this species now convinces me that the following collections, previously cited by me as this species, actually all represent P. incanus (Bong.) Körn. instead: Anderson, Stieber, & Kirkbride 35467, M. A. Chase 10365, Duarte & Graziela Barroso s.n. [A. P. Duarte 7934; Herb. Brad. 27771], Irwin, Maxwell, & Wasshausen 20803, Irwin, Reis dos Santos, Souza, & Fonsêca 22363, 22662, & 22909, Mexia 5748, Schwacke 8477 [Herb. Jard. Bot. Belo Horiz. 2967] & 8482 [Herb. Jard. Bot. Belo Horiz. 26665], and Williams & Assis 6901.

PAEPALANTHUS CANESCENS var. ATRATUS Moldenke, *Phytologia* 29: 192. 1974.

Bibliography: Moldenke, *Phytologia* 29: 192. 1974.

Citations: BRAZIL: Goiás: W. R. Anderson 6636 (Z--type).

PAEPALANTHUS CAPANEMAE Alv. Silv.

Additional bibliography: Moldenke, *Phytologia* 26: 146--147. 1973.

Anderson describes this plant as an herb with white flower-heads and found it growing on a seeping hillside in a "region of rocky sandstone hilltop cerrado, seeping hillsides, rocky open cerrado in raised places on hillsides, and open mesophytic woods by stream", at an altitude of 1600 meters, flowering in March.

Additional citations: BRAZIL: Goiás: W. R. Anderson 6468 (Ld).

PAEPALANTHUS CAPILLACEUS Klotzsch

Additional synonymy: Paepalanthus hippotrichophyllus Herzog in Fedde, *Repert. Spec. Nov.* 29: 208--210, pl. 121, fig. m--o. 1931. Paepalanthus (Eupaep., Vivipari) hippotrichophyllus Herzog ex Fedde & Schust. in Just, *Bot. Jahresber.* 59 (2): 20. 1939.

Additional bibliography: Herzog in Fedde, *Repert. Spec. Nov.* 29: 208--210, pl. 121, fig. m--o. 1931; A. W. Hill, *Ind. Kew.* 9: 199. 1938; Fedde & Schust. in Just, *Bot. Jahresber.* 59 (2): 20. 1939; Wangerin & Krause in Just, *Bot. Jahresber.* 60 (1): 455 [73]. 1941; Worsdell, *Ind. Lond. Suppl.* 2: 183. 1941; Moldenke, *Known Geogr. Distrib. Erioc.* 6, 13, 29, 46, 49, & 60. 1946; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 63, 66, 85, 208, & 209. 1949; Moldenke, *Résumé* 72, 75, 96, 98, 279, 486, & 487.

1959; Moldenke, Résumé Suppl. 1: 6. 1959; Moldenke, Fifth Summ. 1: 124, 130, 159, 162, & 479 (1971) and 2: 496, 579, 949, & 952. 1971; Moldenke, Biol. Abstr. 56: 5374 & 7484. 1973; Moldenke, Phytologia 25: 242 (1973) and 26: 147 & 188--190. 1973.

Additional illustrations: Herzog in Fedde, Repert. Spec. Nov. 29: pl. 121, fig. m--o. 1931.

Paepalanthus hippotrichophyllus is based on Lützelburg 21408, collected at "Igarape Cre-Cru unter Wasser flutend....Der Fundort liegt wohl im Strombereich des Rio Oyapock", supposedly in the state of Pará, Brazil. Macbride photographed the type specimen in the Munich herbarium as his type photograph number 18703. Herzog (1931) comments that "Die neue Art zeichnet sich durch einen recht abweichenden Habitus vor den meisten Paepalanthus aus und konnte nach ihren ganzen Aussehen am ehesten für ein Eriocaulon gehalten werden. Besonders ins Auge fallend ist die Masse der pferdehaar-ähnlichen verbogenen Blätter und das mächtige Wurzelwerk. Dazu kommen die schwammig-binsenartigen Schäfte, die kleinen, oftens mit Blattschöpfen proliferierenden Köpchen und das eigentümliche schwarzliche Kolorit, das wohl auf den Einfluss des Standortes zurückzuführen ist. An den Blüten, die in ihrem Bau keinerlei Abweichung vom Gattungstypus zeigen, interessiert vor allem das Auftreten mächtiger papilloser goldgelber Anhangsel zwischen den 2-lappigem bandförmig breiter Narbenschenkeln und die feinere Struktur der auffallend kurzen, nicht keulenförmigen, aussen glatten, innen schwach tuberkulaten Haare die bei ♂ und ♀ Blüten jeweils nur die eingebogene Spitze der Kelchblätter in burstenartiger Zusammendrängung bedecken. Die submers-aquatische Lebensweise ist in der Gattung Paepalanthus nicht häufig und wohl die Ursache für die Eriocaulon-ähnliche Tracht der vorliegenden Art. Dem Wasserleben entspricht auch die aller Sklerenchymbalken entbehrende Struktur der Schäfte, die abgesehen von dem 2-schichtigen kleinzelligen und derbwandigen Rindenzylinder ganz schwammig gebaut sind."

Additional citations: GUYANA: Cowan & Soderstrom 2125 (N). BRAZIL: Minas Gerais: Brade 13601 [Herb. Jard. Bot. Rio Jan. 25387] (B, Z). Pará: Lützelburg 21408 [Macbride photos 18703] (Mu, Mu, N--photo, W--photo), 29871 (Mu).

PAEPALANTHUS CAPILIACEUS var. SPIRALIS Moldenke

Additional bibliography: Moldenke, Phytologia 26: 190. 1973.

Additional citations: GUYANA: Maguire & Fanshawe 32292 (Mu--isotype).

PAEPALANTHUS CAPITO Körn.

Additional synonymy: Paepalanthus ruficeps Körn., in herb. [not P. ruficeps Ruhl., 1903, nor Alv. Silv., 1928].

Additional bibliography: Moldenke, Phytologia 26: 192--193. 1973.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 35568 (N); Hatschbach 30232 (N); Martius s.n. [Serro

Frio, prope Tejuco; Macbride photos 18696] (Mu--type).

PAEPALANTHUS CARDONAE Moldenke

Additional bibliography: Moldenke, Phytologia 26: 193. 1973.

Steyermark encountered what appears to be this species growing in large clumps in open places at the end of an island, at an altitude of 400 meters, flowering in July. He describes the leaves as rich-green and soft and the flower-heads as white.

Additional citations: VENEZUELA: Bolívar: J. A. Steyermark 106335 (Z).

PAEPALANTHUS CATHARINAE Ruhl.

Additional bibliography: Moldenke, Biol. Abstr. 56: 3000. 1973; Moldenke, Phytologia 26: 193--195. 1973.

Recent collectors have found this plant in swamps and Sphagnum swamps, in "banhado de campo" and "num banhado" and describe it as an "erva, flôr creme". They have found it flowering and fruiting in January and February.

The photograph of Ule s.n., cited below, represents a specimen deposited in the herbarium of the Staatsinstitut für Allgemeine Botanik in Hamburg which has been seen and annotated by me.

Additional citations: BRAZIL: Paraná: Hatschbach 25713 (S). Rio Grande do Sul: Rambo 53783 (Rd--12282), 56402 (Rd--12283). Santa Catarina: Mattos 8408 (Rb); Reitz & Klein 14169 (Ld); Ule s.n. [December 1886] (Z--photo).

PAEPALANTHUS CATHARINAE var. HATSCHBACHI (Moldenke) Moldenke & Smith

Additional bibliography: Moldenke, Biol. Abstr. 56: 3000. 1973; Moldenke, Phytologia 26: 194 & 195. 1973.

Recent collectors have found this plant growing in "banhado de campo", at 1000 to 1400 meters altitude, flowering in October, December, and February. Reitz & Klein describe it as an "erva, flôr branca" or "flôr branco-acinzentado".

Additional citations: BRAZIL: Santa Catarina: Reitz & Klein 7637 (Z), 7905 (Ld), 10161 (Ld), 12379 (Ld), 13495 (Ac).

PAEPALANTHUS CEARAENSIS Ruhl.

Additional bibliography: Braga, Pl. Bordest., ed. 2, 20. 1960; Moldenke, Phytologia 26: 195--196. 1973.

Braga (1960) reports the vernacular name "alfinete" as used for this species in Ceará, Brazil, as well as for Centranthus ruber P. DC. of the Valerianaceae and Erythraea centaurium Pers. in the Gentianaceae.

The F. C. Hoehne 3508 [Macbride photos 18697], cited by me as P. cearaensis in 1973, seems on re-examination to be nothing more than P. lamarckii Kunth.

PAEPALANTHUS CHAPADENSIS Alv. Silv., Fl. Mont. 1: 232--233, pl. 154. 1928 [not P. chapadensis Ruhl., 1971].

Additional bibliography: Moldenke, Phytologia 26: 196—197. 1973.

PAEPALANTHUS CHIQUITENSIS Herzog

Additional bibliography: Fedde & Schust. in Just, Bot. Jahresber. 53 (1): 61 [43]. 1928; R. C. Foster, Contrib. Gray Herb. 184: 39. 1958; Moldenke, Phytologia 26: 197—198. 1973.

PAEPALANTHUS CHRYSOPHORUS Alv. Silv.

Additional bibliography: Moldenke, Phytologia 26: 200—201. 1973.

Additional citations: BRAZIL: Goiás: Irwin, Harley, & Onishi 29543 (N). Minas Gerais: Hatschbach 27276 (S).

PAEPALANTHUS CILIATUS (Bong.) Kunth

Emended synonymy: Paepalanthus ciliatus Kunth apud Körn. in Mart., Fl. Bras. 3 (1): 323. 1863 [not P. ciliatus Kunth Herb. ex Körn. in Mart., Fl. Bras. 3 (1): 326, in syn. 1863].

Additional bibliography: Moldenke, Phytologia 26: 201—202. 1973.

The Paepalanthus ciliatus "Kunth Herb.", referred to in the synonymy above, is a synonym of P. sellowianus Körn.

Additional citations: MOUNTED ILLUSTRATIONS: Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: pl. 5. 1831 (N, Z).

PAEPALANTHUS CILIOLATUS Ruhl.

Additional bibliography: Moldenke, Phytologia 26: 226—227. 1973; Moldenke, Biol. Abstr. 56: 5374 (1973) and 57: 679. 1974.

PAEPALANTHUS CLAUSSENIANUS Körn.

Additional synonymy: Actinocephalus clausseianus Körn., in herb.

Additional bibliography: Moldenke, Phytologia 26: 228—230. 1973.

Anderson and his associates have found this plant growing in wet sand on very rocky sandstone hilltops with occasional wet spots, in sandy soil in brejo (sedge meadow) in an area of "gallery forest with adjacent brejo and drier higher slopes with grassy campo or rocky cerrado", and "on wet campo in an area of pebbly cerrado and sandy grassy campo", and describe it as a branched herb 20 cm. to 1.2 m. tall, with white flower-heads. Sick encountered it in cerrado.

Additional citations: BRAZIL: Goiás: W. R. Anderson 10397 (Ac). Minas Gerais: W. R. Anderson 8641 (Ld); Anderson, Stieber, & Kirkbride 35118 (Ub); Hatschbach 27011 (S); Irwin, Fonsêca, Souza, Reis dos Santos, & Ramos 27584 (S); Irwin, Harley, & Onishi 28977 (N); Martius 879 [Macbride photos 18698] (Mu—cotype, Mu—cotype, Mu—cotype, Z—cotype); Sick B.647 (Mu). MOUNTED ILLUSTRATIONS: Körn. in Mart., Fl. Bras. 3 (1): pl. 43. 1863. (N, Z).

PAEPALANTHUS COLUMBIENSIS Ruhl.

Additional bibliography: Moldenke, *Phytologia* 26: 231--232 (1973) and 28: 435. 1974.

Saldarriaga & Bakley encountered this plant in marshy areas in open woodland, flowering and fruiting in August.

Additional citations: COLOMBIA: Antioquia: Saldarriaga & Barkley 53035 (Ld).

PAEPALANTHUS COMOSUS Alv. Silv.

Additional bibliography: Moldenke, *Phytologia* 26: 233. 1973.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 35885 (N).

PAEPALANTHUS CONDUPLICATUS Körn.

Additional bibliography: Moldenke, *Phytologia* 26: 469. 1973.

Killip, in 1935, made this notation on the U. S. National Herbarium sheet of Mexia 5745: "Paep. near conduplicatus (Glaz. 15525) at Paris". I regard the Mexia collection as a mixture of P. planifolius var. conduplicatulus Ruhl. and P. planifolius var. globulifer (Alv. Silv.) Moldenke & Smith.

PAEPALANTHUS CORDATUS Ruhl.

Additional bibliography: Moldenke, *Phytologia* 26: 237--238. 1973.

Irwin and his associates describe this plant as an erect herb, to 1.5 m. tall, with light-gray flower-heads, refer to it as "occasional in cerrado" at altitudes of 950--1200 meters, and found it flowering in March. Material has been misidentified and distributed in some herbaria as P. acanthophyllus Ruhl. and P. amoemus (Bong.) Körn.

Additional citations: BRAZIL: Goiás: Irwin, Grear, Souza, & Reis dos Santos 13588 (N), 14300 (Ca--1381725, N).

PAEPALANTHUS CORYMBOSUS (Bong.) Kunth

Additional bibliography: Mart., *Erioc. Selbst. Pflanzenfam.* 15. 1833; Moldenke, *Phytologia* 26: 239--241. 1973.

Irwin and his associates describe this plant as caespitose, the inflorescences on "axes to 20 cm. long", the flower-heads light-gray, and found it growing in crevices on steep iron-rich rocky slopes near the summit, at altitudes of 1800 to 2000 meters, flowering in January.

Material has been misidentified and distributed in some herbaria as P. bromelioides Alv. Silv.

Additional citations: BRAZIL: Minas Gerais: Irwin, Harley, & Onishi 30225 (Ac, N, W--2709817). MOUNTED ILLUSTRATIONS: Bong., *Mém. Acad. Imp. Sci. St. Pétersb.*, ser. 6, 2: 233--234, pl. 18. 1832 (N, Z).

PAEPALANTHUS COSTARICENSIS Moldenke

Additional bibliography: Moldenke, *Phytologia* 26: 241. 1973.

Additional citations: COSTA RICA: Cartago: Croat 398 (E--2056403); J. León 2708 (Mu).

PAEPALANTHUS COUTOENSIS Moldenke

Additional bibliography: Moldenke, Phytologia 26: 241--242. 1973.

Recent collectors have encountered this plant in the restinga formation, flowering in February. They describe it as 40 cm. tall, the "inflorescências arroxeadas" (Belém & Pinheiro 2485) or with white flowers (Belém & Pinheiro 2113). Material has been misidentified and distributed in some herbaria as P. plumipes Alv. Silv. and P. polyanthus (Bong.) Kunth.

Additional citations: BRAZIL: Bahia: Belém & Pinheiro 2113 (N), 2485 (Ld, N). Guanabara: Krapovickas, Cristóbal, & Maruffak 23209 (Ld). Minas Gerais: Irwin, Maxwell, & Wasshausen 20701 (N).

PAEPALANTHUS CRASSICAULIS Körn.

Additional bibliography: Moldenke, Phytologia 26: 242--243 & 480. 1973.

Pring reports encountering this plant on a savanna in Colombia.

Additional citations: COLOMBIA: Cundinamarca: Daniel s.n. [2. 2.1909] (Mu); Pring 164 (E--904837). VENEZUELA: Trujillo: J. A. Steyermark 105022 (S). PERU: Department undetermined: Ruiz & Pavon s.n. [1777-1788] (E--1612101).

PAEPALANTHUS CRYOCEPHALUS Alv. Silv.

Additional bibliography: Moldenke, Phytologia 26: 244. 1973.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 35827 (N).

PAEPALANTHUS DICHOTOMUS Klotzsch

Additional bibliography: Moldenke, Phytologia 26: 252--253. 1973; Hocking, Excerpt. Bot. A.23: 290. 1974.

PAEPALANTHUS DICHOTOMUS var. BRASILIENSIS Moldenke

Additional bibliography: Moldenke, Phytologia 26: 253. 1973; Hocking, Excerpt. Bot. A.23: 290. 1974.

Additional citations: BRAZIL: Minas Gerais: Hatschbach 27425 (S--isotype).

PAEPALANTHUS DISTICHOPHYLLUS Mart.

Additional bibliography: Mart., Erioc. Selbst. Pflanzenfam. 23. 1833; Moldenke, Phytologia 26: 469. 1973.

Anderson and his associates found this plant growing in an area of sandstone outcrops with shrubby vegetation, adjacent grassy slopes, and the valley of a small stream, mostly sandy soil but with overlying black humus in many places, at an altitude of 1550 meters, flowering and fruiting in February, and describe it as 1.7

m. tall, with white flower-heads.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 35863 (Ub); Hatschbach 27372 (S); Martius s.n. [Itambé, summus mons; Macbride photos 18699] (Mu--type, Mu--isotype). MOUNTED ILLUSTRATIONS: Körn. in Mart., Fl. Bras. 3 (1): pl. 44 III. 1863 (N, Z).

PAEPALANTHUS DIVARICATUS (Bong.) Kunth

Additional bibliography: Moldenke, Phytologia 26: 249 & 258--260. 1973.

The Martius s.n. [Serro Frio], distributed as P. divaricatus, seems to be P. ramosus (Wikstr.) Kunth instead.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 35454 (N). MOUNTED ILLUSTRATIONS: Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: pl. 3. 1831 (N, Z).

PAEPALANTHUS DOMINGENSIS Ruhl.

This taxon is conspecific with P. repens (Lam.) Körn., which see.

PAEPALANTHUS DUBIUS Körn.

Additional bibliography: Moldenke, Phytologia 26: 262. 1973.

The J. E. Pohl s.n. [in Brasilia], distributed as P. dubius, is actually P. lanato-albus Mart.

PAEPALANTHUS DUIDAE Gleason

Synonymy: Paepalanthus dudidae Moldenke, Biol. Abstr. 57: 679, sphalm. 1974.

Additional bibliography: Moldenke, Phytologia 26: 470. 1973; Moldenke, Biol. Abstr. 57: 679. 1974.

Additional citations: VENEZUELA: Amazonas: Maguire, Wurdack, & Bunting 37123 (Mu).

PAEPALANTHUS DUPATYA Mart.

Additional bibliography: Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1158 & Ind. 20. 1972; Moldenke, Phytologia 26: 470--471. 1973.

Additional citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 36148 (N).

PAEPALANTHUS ELONGATUS (Bong.) Körn.

Additional bibliography: Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1158 & Ind. 12 & 20. 1972; Moldenke, Fifth Summ. 1: 161 & 480 (1971) and 2: 492, 499, 581, & 951. 1971; Moldenke, Phytologia 26: 473--479 (1973) and 29: 192. 1974; Hocking, Excerpt. Bot. A.23: 292. 1974.

The Martius collection, cited below, appears to be a mixture with var. ciliatus Körn.

Additional citations: BRAZIL: Goiás: Irwin, Grear, Souza, & Reis dos Santos 14564 (Ld). Minas Gerais: Martius s.n. [arenosis

apricis ad Vao do Paruán et alibi], in part (Mu).

PAEPALANTHUS ELONGATUS var. ANGUSTIFOLIUS Alv. Silv.

Additional bibliography: Moldenke, Phytologia 26: 475. 1973.

Irwin and his associates describe this plant as caespitose, the culms to 70 cm. tall, and found it growing on rocky campos, at 1250 meters altitude, in flower and fruit in March.

Citations: BRAZIL: Goiás: Irwin, Grear, Souza, & Reis dos Santos 13351 (Ld, Z).

PAEPALANTHUS ELONGATUS var. CILIATUS Körn.

Additional bibliography: Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1158 & Ind. 20. 1972; Moldenke, Phytologia 26: 474-477. 1973.

Anderson found this plant growing in "campo limpo in sandy soil, wet in some places", at 1080 meters altitude, and describes it as a perennial herb with white flower-heads.

Additional citations: BRAZIL: Goiás: W. R. Anderson 8045 (Ub). Minas Gerais: Martius 877 [Macbride photos 18701] (Mu-cotype, Mu-cotype), s.n. [arenosis apricis ad Veo do Paruán et alibi], in part (Mu, Mu); J. E. Pohl s.n. [in Brasilia] (Mu).

PAEPALANTHUS ELONGATUS f. GRAMINIFOLIUS Herzog

Additional bibliography: Moldenke, Phytologia 26: 477-478. 1973.

The actual type specimens of this form in the Munich herbarium is inscribed "Serra do Rio de Contas, 1000 m. 1914/VII".

Additional citations: BRAZIL: Bahia: Lützelburg 72 [N. Y. Bot. Gard. type photos new ser. neg. 8849] (Mu--type, N--photo of type, Z--photo of type).

PAEPALANTHUS ELONGATUS var. LONGIBRACTEATUS Moldenke, Phytologia 29: 192. 1974.

Bibliography: Moldenke, Phytologia 29: 192. 1974.

Citations: BRAZIL: Goiás: Irwin, Grear, Souza, & Reis dos Santos 12374 (Z--type).

PAEPALANTHUS ELONGATUS var. NIGER Moldenke

Additional bibliography: Moldenke, Phytologia 26: 478. 1973; Hocking, Excerpt. Bot. A.23: 292. 1974.

Additional citations: BRAZIL: Goiás: Irwin, Harley, & Smith 32187 (N--isotype).

PAEPALANTHUS ELONGATUS var. PUBESCENS Alv. Silv.

Additional bibliography: Moldenke, Phytologia 26: 475 & 478-479. 1973.

Anderson encountered this plant in "campo limpo" on sandy soil, wet in some places, at an elevation of 1080 meters, flowering in April, and describes it as a perennial herb with white flower-heads.

Additional citations: BRAZIL: Goiás: W. R. Anderson 8036 (Ld),

8044 (Ld). Minas Gerais: Irwin, Harley, & Onishi 29039 (N).

PAEPALANTHUS ENSIFOLIUS (H.B.K.) Kunth

Additional bibliography: Wikstr., K. Svensk. Vet. Akad. Handl. Stockh., ser. 2, 1: 79. 1820; Wikstr., Trenne Nya Art. Örtsl. Ericoc. 14 (repr.). 1821; Moldenke, Phytologia 26: 479—481. 1973.

The Daniel s.n. [2.2.1909], distributed as P. ensifolius, is actually P. crassicaulis Körn.

PAEPALANTHUS EURYPHYLLUS Ruhl.

Additional bibliography: Moldenke, Phytologia 26: 484. 1973.

Anderson and his associates found this plant growing in an area of hillsides with secondgrowth forest and bracken-covered campos, sloping down to a river, with blocky sandstone and sandy soil.

Citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 35679 (N, Z); Magalhães Gomes 1654 [Macbride photos 10603] (B—type, N—photo of type, N—photo of type, W—photo of type, Z—iso-type); Mello Barreto 4655 [Herb. U. S. Nat. Arb. 236404; Herb. Jard. Bot. Belo Horiz. 17549] (W—2121713).

PAEPALANTHUS EXIGUUS (Bong.) Körn. in Mart., Fl. Bras. 3 (1): 314. 1863.

Synonymy: Eriocaulon exiguum Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 627, [pl. 59]. 1831. Paepalanthus exiguus Körn. in Mart., Fl. Bras. 3 (1): 314. 1863. Dupatya exigua (Bong.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Dupatya exigua Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902. Paepalanthus exigus (Bong.) Korn. ex Moldenke, Phytologia 28: 460, in syn. 1974.

Bibliography: Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 627, [pl. 59]. 1831; Bong., Ess. Monog. Erioc. 27. 1831; Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 574 & 613. 1841; D. Dietr., Syn. Pl. 5: 267. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 279 & 333. 1855; Körn. in Mart., Fl. Bras. 3 (1): 314 & 507. 1863; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 878 (1893) and pr. 1, 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 26, 182, 183, [283], 285, & 290. 1903; Beauverd, Bull. Herb. Boiss., ser. 2, 8: [291] & 293, fig. 11 D 8—16. 1908; Alv. Silv., Fl. Mont. 1: 406. 1928; Stapf, Ind. Lond. 4: 518. 1930; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 52. 1930; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 878 (1946) and pr. 2, 2: 401. 1946; Moldenke, Known Geogr. Distrib. Erioc. 12, 29, 34, & 48. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 84 & 209. 1949; Moldenke, Phytologia 4: 142. 1952; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 145. 1959; Moldenke, Résumé 97, 280, 288, 324, & 487. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 878 (1960) and pr. 3, 2: 401. 1960;

Renné, Levant. Herb. Inst. Agron. 70. 1960; Moldenke, Fifth Summ. 1: 161 & 480 (1971) and 2: 500, 582, & 951. 1971; Moldenke, Phytologia 28: 460. 1974.

Bongard (1831) describes this species as follows: "acaule, foliis linearibus acutis glabris; pedunculis fasciculatis pubescentibus; vaginis folia adaequantibus glabris. T. LIX. Habitat in graminosis humidis prope Ilheos, provinciae Bahiensis, et in provincia Minas Geraes. Floret.....". The former collection was made by Ludwig Riedel (unnumbered) in grassy damp places at Ilheos, flowering in June, and the latter by the same collector in damp meadows in the Serra do Carassa, both deposited in the Leningrad herbarium. The species has also been found growing in campos and on rocky ground, flowering in February, April, June, November, and December. Anderson and his associates encountered it in wet shady places under a sandstone ledge, mixed with P. miser Ruhl., at 1000 to 1050 meters altitude, in an area of steep rocky hillsides below sandstone cliffs, a stream at the base of the hills, and recently burned campo between the hills.

Although Jackson (1893) cites a plate "59" in Bongard's work as illustrating this species -- as Bongard himself does (1831) -- Kunth (1841) assures us that this plate was never published. Probably it exists only in the Leningrad library or herbarium.

Ruhland (1903) cites from Bahia: L. Riedel s.n., and from Minas Gerais: Burchell 5656, Glaziou 17848, Langsdorff s.n., H. Magalhães s.n. [Herb. Com. Geogr. & Geol. Minas 1290], L. Riedel s.n., Schwacke 7314 & 9236, and A. Silveira s.n. [Herb. Com. Geogr. & Geol. Minas 2980], all deposited in the Berlin herbarium. Silveira (1928) cites a no. 253 from near Ouro Preto, collected in 1900, but whether collected by himself or by someone else is not clear.

The J. A. Steyermark 57894, distributed as P. exiguus, is a mixture of P. lamarckii Kunth and Syngonanthus gracilis (Körn.) Ruhl., while the Williams & Assis 6864, cited below, is a mixture of P. exiguus and P. gyrotrichus Ruhl.

Additional citations: BRAZIL: Amazonas: Fröes & Addison 29299 (Z). Minas Gerais: Anderson, Stieber, & Kirkbride 35637 (Ld, N); Burchell 5656 (Br); Magalhães Gomes 3967 (N); Mendes Magalhães 4358 [Herb. Jard. Bot. Belo Horiz. 45243] (N); Williams & Assis 6864, in part (N). Pará: Ducke s.n. [Herb. Mus. Goeldi 11430] (Z). Roraima: Black & Magalhães 51-12924 (N). LOCALITY OF COLLECTION UNDETERMINED: Herb. Inst. Agron. Norte 10 (Z).

PAEPALANTHUS EXIGUUS var. LONGIFOLIUS Beauverd, Bull. Herb. Boiss., ser. 2, 8: [291] & 293, fig. 11 D 8--16. 1908.

Bibliography: Beauverd, Bull. Herb. Boiss., ser. 2, 8: [291] & 293, fig. 11 D 8--16. 1908; Moldenke, Known Geogr. Distrib. Erioc. 12 & 48. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 84 & 209. 1949; Moldenke, Résumé 97 & 487. 1959; Moldenke, Fifth

Summ. 1: 161 (1971) and 2: 951. 1971.

Illustrations: Beauverd, Bull. Herb. Boiss., ser. 2, 8: [291], fig. 11 D 8--16. 1908.

This variety is based on Damazio 712, collected in swamps on the Morro da São Sebastião, Minas Gerais, Brazil, in September of 1904 and deposited in the Herbarium Boissier at Geneva. Beauverd (1908) describes the plant as "Differt a forma typica foliis vix duplo longioribus, recurvatis; caetera ut in typus". He comments that "Cette plante minuscule a été signalée dans l'Etat de Bahia et paraît commune dans celui du Minas Geraes, dont Ruhland cite une demi-douzaine de provenances différentes. L'une d'elles est exactement celle d'où notre zélé correspondant M. Damazio nous l'a envoyée: la seule différence réside dans la date de floraison qui est fin septembre pour notre plante tandis qu'elle est notée en novembre dans l'Herbier de la Commission géographique de Minas, No. 2980: il se pourrait que cette variation dans la date de floraison d'une même station coïncidât avec la différence que nous avons notée pour la forme des feuilles, et à laquelle l'on pourrait ajouter celle des bractées stipitantes, qui selon Koernicke sont de même forme que les bractées involucrentes, tandis qu'elles en diffèrent très sensiblement chez les échantillons que nous avons examinés et desquels nous donnons une illustration."

The variety is thus far known only from the type collection.

PAEPALANTHUS EXTREMENSIS Alv. Silv., Fl. Mont. 1: 163--164, pl. 103. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 163--164 & 406, pl. 103. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 476. 1937; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 12 & 48. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 84 & 209. 1949; Moldenke, Résumé 97 & 487. 1959; Moldenke, Fifth Summ. 1: 161 (1971) and 2: 951. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 103. 1928.

This species is based on A. Silveira 818, collected along the margins of the Rio Extrema, near Grão Mogol, Minas Gerais, Brazil, in July of 1926, and is deposited in the Silveira herbarium. Silveira (1928) comments that the species as "A. P. coloidi Ruhl. foliis minoribus facile distinguitur". Prance & Silva describe the plant as a small herb, frequent in the cerrado zone, flowering in July. Irwin and his associates describe it as a low herb, 15--25 cm. tall, growing on wet slopes in campos or in shallow water in an area of rocky slopes and wet campos, at altitudes of 1000 to 1200 meters, flowering in February, and fruiting in October.

Citations: BRAZIL: Goiás: Irwin, Grear, Souza, & Reis dos Santos 12575 (Ac, N); Irwin, Souza, & Reis dos Santos 9494 (Ld, N); Prance & Silva 58198 (N, N, S, W--2584614a, Z).

PAEPALANTHUS FALCIFOLIUS Körn. in Mart., Fl. Bras. 3 (1): 327, pl. 45. 1863.

Synonymy: Eriocaulon (Paepalanthus) rigidum Mart., Flora 24, Beibl. 2: 35. 1841 [not E. rigidum Bong., 1831]. Dupatya falcifolia (Körn.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Eriocaulon rigidum Mart. ex Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 878, in syn. 1893. Dupatya falcifolia Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902. Paepalanthus gomesii (Silv.) Ruhl. ex Moldenke, Résumé 325, in syn. 1959 [not P. gomesii Alv. Silv., 1928]. Paepalanthus gomesii Ruhl. ex Moldenke, Résumé Suppl. 1: 20, in syn. 1959. Paepalanthus falcifolius Mart. ex Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 190. 1969. Eriocaulon ascendens Bong., in herb.

Bibliography: Mart., Flora 24, Beibl. 2: 35. 1841; Körn. in Mart., Fl. Bras. 3 (1): 283, 327, 328, 499, & 507, pl. 45. 1863; Hieron. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 2 (4): 22, fig. 11. 1888; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 878 (1893) and pr. 1, 2: 401. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 3, 189, 192-194, [283], 287, & 290, fig. 26. 1903; Alv. Silv., Fl. Mont. 1: 406. 1928; Stapf, Ind. Lond. 4: 518. 1930; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 41 & 52. 1930; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 145. 1941; Moldenke, Known Geogr. Distrib. Erioc. 12, 29, 39, & 48. 1946; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 878 (1946) and pr. 2, 2: 401. 1946; Moldenke, Alph. List Cit. 2: 402 (1948) and 4: 1203 & 1297. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 84 & 209. 1949; Moldenke, Phytologia 4: 142. 1952; Angely, Fl. Paran. 10: 4. 1957; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 145. 1959; Moldenke, Résumé 97, 280, 291, 325, & 487. 1959; Moldenke, Résumé Suppl. 1: 20. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 878 (1960) and pr. 3, 2: 401. 1960; Rennó, Levant. Herb. Inst. Agron. 70. 1960; Moldenke, Phytologia 19: 103. 1969; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 159-161, 167, 173, 174, & 187-189. 1969; Moldenke, Fifth Summ. 1: 161 & 480 (1971) and 2: 510, 582, 583, & 951. 1971; Moldenke, Phytologia 26: 250. 1973.

Illustrations: Körn. in Mart., Fl. Bras. 3 (1): pl. 45. 1863; Hieron. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 2 (4): 22, fig. 11. 1888; Ruhl. in Engl., Pflanzenreich 13 (4-30): 192, fig. 26. 1903.

This species is based on P. Clausen 47, Martius 880, and J. E. Pohl s.n., all from Minas Gerais, Brazil, the first-mentioned from the Serra d'Itabira, but the others with no specific locality noted. The type of Eriocaulon rigidum Mart. is P. Clausen 495, deposited in the Berlin herbarium; the E. rigidum Bong., referred to in the synonymy above, is the name-bringing synonym of Paepalanthus rigidus (Bong.) Kunth. Eriocaulon ascendens is based on Martius 828 in the Munich herbarium.

Magalhães Gomes 2718, in the Berlin herbarium, was annotated by Ruhland as "Paepalanthus gomesii Ruhl., n. sp." after the name P. falcifolius had been crossed out by him, but the specimen seems to me to be identical with the latter taxon. Paepalanthus gomesii Alv. Silv. is an entirely different and apparently valid species.

Irwin and his associates describe P. falcifolius as a decumbent shrub with stems to 75 cm. long and with white flower-heads, and have found it growing in wet campos in an area of cerrado interspersed with wet rocky campo, at 950 meters altitude. It has been collected in anthesis in February and April, growing also in sandy places.

Ruhland (1903) cites from Minas Gerais P. Clausen 47 (Br) & 221 (Br), Magalhães Gomes 3939 (B), Martius 880 (B), and J. E. Pohl s.n. (B). Silveira (1928) cites a no. 247 from Venda do Campo, Minas Gerais, collected in 1894, but whether collected by himself or by someone else is not clear.

Material of this species has been misidentified and distributed in herbaria as P. denudatus Körn., P. falcatus Körn., and P. rigidus (Bong.) Kunth. On the other hand, the G. Gardner 5248, distributed as P. falcifolius, is actually P. denudatus Körn., P. Clausen 267, 313, & 319 are P. ramosus (Wikstr.) Kunth, and P. Clausen 49 is Eriocaulon sellowianum Kunth.

Additional citations: BRAZIL: Minas Gerais: P. Clausen 47 (B--cotype), 64 (S), 495 (B); Irwin, Reis dos Santos, Souza, & Fonseca 23356 (N, Z); Macedo 2758 (N, S); Magalhães Gomes 2718 [Macbride photos 10612] (B, N--photo, N--photo, W--photo), 3939 [Herb. Jard. Bot. Belo Horiz. 26652] (B, N); Magalhães Gomes & Schwacke 2718 [Herb. Jard. Bot. Belo Horiz. 26651] (N); Maguire, Mendes Magalhães, & Maguire 49299 (N); Martius 828 (Mu), 880 [N. Y. Bot. Gard. type photos new ser. neg. 8848] (B--cotype, M--cotype, Mu--cotype, N--photo of cotype, Z--photo of cotype), s.n. [Serro Frio] (B); Mendes Magalhães 1306 [Herb. Jard. Bot. Belo Horiz. 39872] (Be--14809, N, W--2124159); J. E. Pohl s.n. (Mu--cotype). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B); Körn. in Mart., Fl. Bras. 3 (1): pl. 45. 1863 (B, N, Z).

PAEPALANTHUS FALLAX Beauverd, Bull. Herb. Boiss., ser. 2, 8: 288--290, fig. 10 A 1--10. 1908.

Bibliography: Beauverd, Bull. Herb. Boiss., ser. 2, 8: 288--290, fig. 10 A 1--10. 1908; Prain, Ind. Kew. Suppl. 4, pr. 1, 170. 1913; Stapf, Ind. Lond. 4: 518. 1930; Moldenke, Known Geogr. Distrib. Erioc. 12 & 48. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 84 & 209. 1949; Prain, Ind. Kew. Suppl. 4, pr. 2, 170. 1958; Moldenke, Résumé 98 & 487. 1959; Moldenke, Fifth Summ. 1: 161 (1971) and 2: 951. 1971.

Illustrations: Beauverd, Bull. Herb. Boiss., ser. 2, 8: 289, fig. 10 A 1--10. 1908.

This species is based on Damazio 1509 from Ouro Preto, Minas Gerais, Brazil, deposited in the Herbarium Boissier at Geneva. Beauverd (1908) notes that "Cette espèce, voisine du Paepalanthus undulatus Ruhland s'en distingue nettement par ses pédoncules solitaires à l'aisselle des feuilles (et non fasciculés par 5--8), par ses graines sensiblement plus courtes que les feuilles, à orifice tronqué transversalement (obliquement chez P. undulatus): en outre, les stigmates sont profondément bifides, bien que les deux ramifications de chaque branche restent parfois soudées jusqu'au sommet chez plusieurs des fleurs que nous avons examinées. Les appendices, digités-papilleux au sommet, dépassant longement les branches du stigmate; stigmate et appendices sont soudés à la base en un style fusiforme très court. — Les poils du réceptacle et de la base des fleurs sont longuement articulés-aigus; ceux du sommet des sépales et des pétales sont fortement claviformes-articulés, et chez la moitié supérieure des pétales des fleurs femelles, les marges sont également ciliées de poils obtusiuscules, filiformes-articulés."

The species is known thus far only from the original collection.

PAEPALANTHUS FASCICULATUS (Rottb.) Kunth, Enum. Pl. 3: 506. 1841.

Synonymy: Eriocaulon fasciculatum Rottb., Act. Litt. Univ. Hafn. 1: 271, pl. 2, fig. 1. 1778 [not E. fasciculatum Bong., 1831, nor Lam., 1789, nor Weig., 1959, nor Willd., 1959]. Eriocaulon congestum H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 1: 201. 1816. Eriocaulon congestum Humb. & Bonpl. apud Roem. & Schult. in L., Syst. Veg., ed. 15 nova, 2: 867. 1817. Eriocaulon congestum Kunth apud Spreng. in L., Syst. Veg., ed. 16, 3: 774. 1826. Paepalanthus congestus Kunth, Enum. Pl. 3: 505. 1841. Eriocaulon congestum Humb. & Kunth ex Kunth, Enum. Pl. 3: 505 & 613, in syn. 1841. Paepalanthus congestus Humb. & Bonpl. ex Kunth, Enum. Pl. 3: 514. 1841. Paepalanthus fasciculatus Kunth ex Klotzsch in M. R. Schomb., Reisen Brit.-Guian. [Vers. Fauna & Fl. Brit.-Guian.] 3: 896. 1848. Paepalanthus fasciculatus Körn. in Mart., Fl. Bras. 3 (1): 284, 357, & 507. 1863. Paepalanthus congestus Körn. in Mart., Fl. Bras. 3 (1): 505. 1863. Dupatya fasciculata (Rottb.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Dupatya fasciculata Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902. Paepalanthus fasciculatus (Rottb.) Körn. apud Ruhl. in Engl., Pflanzenreich 13 (4-30): 160. 1903. Paepalanthus fasciculatus f. genuina Herzog in Fedde, Repert. Spec. Nov. 29: 205. 1931. Paepalanthus congestus (H.B.K.) Kunth ex Moldenke, Résumé Suppl. 1: 20, in syn. 1959. Paepalanthus cylindrocephalus Mart. ex Moldenke, Résumé Suppl. 1: 20, in syn. 1959. Paepalanthus fasciculatus (Schrad.) Körn. ex Moldenke, Résumé Suppl. 1: 20, in syn. 1959. Paepalanthus fasciculatus (Rottb.) Kuntze ex Moldenke,

Fifth Summ. 1: 582, in syn. 1971. *Syngonanthus fasciculatus* Black ex Moldenke, Fifth Summ. 1: 636, in syn. 1971.

Bibliography: Rottb., Act. Litt. Univ. Hafn. 1: 271, pl. 2, fig. 1. 1778; J. F. Gmel. in L., Syst. Nat., ed. 13, 2: 206 & 867. 1791; L. C. Rich., Act. Soc. Hist. Nat. Paris 1: 113. 1792; H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 1: 201 (1816) and ed. quarto, 1: 252. 1816; Roem. & Schult. in L., Syst. Veg., ed. 15 nova, 2: 867. 1817; Wikstr., K. Svensk. Vet. Akad. Handl. Stockh., ser. 2, 1: 76. 1820; Steud., Nom. Bot. Phan., ed. 1, 312. 1821; Wikstr., Trenne Nya Art. Örtsl. Erioc. 11. 1821; Roem. & Schult., Mant. 2: 469. 1824; Spreng. in L., Syst. Veg., ed. 16, 3: 774. 1826; Roem. & Schult., Mant. 3: 671. 1827; Steud., Nom. Bot., ed. 2, 1: 585. 1840; Paxt., Pock. Bot. Dict., ed. 1, 124. 1840; Kunth, Enum. Pl. 3: 497, 505, 506, 514, 520, 537, 573, 613, & 624. 1841; Mart., Flora 24: Beibl. 2: 60. 1841; Klotzsch in M. R. Schomb., Reisen Brit.-Guian. 3: [Vers. Fauna & Fl. Brit.-Guian.] 896. 1848; Paxt., Pock. Bot. Dict., ed. 2, 124. 1849; D. Dietr., Syn. Pl. 5: 260. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 275--276 & 333. 1855; Körn. in Mart., Fl. Bras. 3 (1): 284, 357--358, 505, & 507. 1863; Benth. & Hook. f., Gen. Pl. 3 (2): 1023. 1883; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 878 (1893) and pr. 1, 2: 401. 1894; Huber, Bol. Mus. Para. 2: 499. 1898; Barnh., Bull. Torrey Bot. Club 29: 585--598. 1902; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 17, 153, 160, [283], 285, 289, & 290. 1903; Herzog in Fedde, Repert. Spec. Nov. 29: 205--206. 1931; H. A. Gleason, Bull. Torrey Bot. Club 58: 327. 1931; Uittien & Heyn in Pulle, Fl. Surin. 1 [Meded. Konink. Ver. Ind. Inst. 30, Afd. Handelsmus. 11]: 216--218. 1938; Fedde & Schust. in Just, Bot. Jahresber. 59 (2): 19. 1939; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 878 (1946) and pr. 2, 2: 401. 1946; Moldenke, Known Geogr. Distrib. Erioc. 5--7, 12, 29, 33, 34, 46, & 48. 1946; Moldenke, Alph. List Cit. 1: 132. 1946; Moldenke, Phytologia 2: 374. 1947; Moldenke in Maguire & al., Bull. Torrey Bot. Club 75: 196. 1948; Moldenke, Alph. List Cit. 2: 409 & 556 (1948), 3: 701, 702, 744, 805, 809, 892, 956, & 975 (1949), and 4: 1043, 1074, 1079, 1132, & 1169. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 61, 64, 66--68, 84, & 209. 1949; Moldenke, Phytologia 3: 142 (1949) and 4: 142--143. 1952; Moldenke, Mutisia 6: [1]. 1952; Moldenke in Maguire, Mem. N. Y. Bot. Gard. 8: 97. 1953; R. E. Schult., Bot. Mus. Leafl. Harvard Univ. 16 (4): pl. 11. 1953; Uribe, Mutisia 25: 28. 1956; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 145. 1959; Moldenke, Résumé 67, 72, 75, 77, 78, 98, 280, 287, 288, 324, 325, & 487, 1959; Moldenke, Résumé Suppl. 1: 16. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 878 (1960 and pr. 3, 2: 401. 1960; Moldenke, Résumé Suppl. 3: 12 & 13 (1962), 4: 5 (1962), and 5: 5. 1962; Lindeman & Görts-van Rijn in Pulle & Lanjouw, Fl. Surin. 1 [Meded. Konink. Inst. Trop. 30, Afd. Trop. Prod. 11] 331. 1968; Moldenke, Résumé Suppl. 18: 10. 1969; Moldenke, Phytologia 20: 295, 297, & 414--418. 1970; Moldenke, Fifth Summ. 1:

118, 125, 130, 132, 134, 161, & 480 (1971) and 2: 497, 500, 580, 582, 636, 951, & 973. 1971; Moldenke, Phytologia 25: 159 & 160 (1973) and 28: 435. 1974.

Illustrations: Rottb., Act. Litt. Univ. Hafn. 1: pl. 2, fig. 1. 1778; R. E. Schult., Bot. Mus. Leaflet. Harvard Univ. 16 (4): pl. 11. 1953.

This widespread species is based on Herb. Rottböll s.n. from Surinam, deposited in the Copenhagen herbarium where it was photographed by Macbride as his type photograph number 22281. The type of Eriocaulon congestum was collected by Humboldt and Bonpland along the banks of the Río Yáo in the primeval forests of the Orinoco, Venezuela, and is deposited at Berlin. Paepalanthus cylindrocephalus is probably based on Spruce 109, in part, from Pará, Brazil.

Although the H.B.K. references in the synonymy and bibliography of this species are often cited as "1815", Barnhart (1902) asserts that both are more correctly given as 1816. The Klotzsch (1848) references are sometimes cited as "8: 96". In both places Paepalanthus fasciculatus "Kunth" is mentioned and thus accredited, with as synonyms Eriocaulon fasciculatum Rottb., Eriocaulon fasciculare Weigelt, and E. caespitosum Poepp. — the two latter names, however, belong in the synonymy of Paepalanthus bifidus (Schrad.) Kunth.

As to the author-citation for the binomial here adopted for this species, see my discussion under Paepalanthus bifidus in a previous installment of this series of notes. Unless the interpretation here proposed is adopted, the species here under discussion would have to be called P. congestus (H.B.K.) Kunth.

The "Eriocaulon fasciculare L." of Raeuschel, sometimes placed in the synonymy of P. fasciculatus, actually belongs in that of P. lamarckii Kunth.

Kunth (1841) includes Eriocaulon fasciculare Weigelt and "Eriocaulon caespitosum (Wikstr.?)" in the synonymy of P. fasciculatus and cites also "Bong. in Act. Petrop. 1. 1. 624 (excl. Lam.) fide synon. Weigelt. Surin.", but I regard these names as belonging to the synonymy of Paepalanthus bifidus (Schrad.) Kunth. At the close of his description Kunth asks the question "An recte huc relatus? P. polytrichoidi et P. lamarckii tamen simillimus." On page 506 of his work he erroneously says that "E. fasciculatum Bong. est Paepalanthus fasciculatus" — it really is P. bifidus. He also compares P. fasciculatus with P. bryoides (Riedel) Kunth, P. perpusillus Kunth, Philodice cuyabensis (Bong.) Kunth, and Philodice hoffmannseggii Mart. He also notes that Syngonanthus caulescens (Poir.) Ruhl. "Eriocauli fasciculati fors tantum varietatem giganteam esse, suspicatur Poirot" — a possibility which is, of course, completely out of the question in light of present knowledge. Steudel (1821) places Eriocaulon

fasciculatum Rottb. doubtfully in the synonymy of E. fasciculatum Lam. [which is now known as Paepalanthus lamarckii Kunth].

It should be noted here that the Eriocaulon fasciculatum of Bongart and of Weigelt, referred to in the synonymy and elsewhere above, are synonyms of Paepalanthus bifidus (Schrad.) Kunth, while that of Lamarck and of Willdenow are synonyms of Paepalanthus lamarckii Kunth.

Witten & Heyn (1938) cite the H.B.K. reference in the bibliography of this species as "1815", but as indicated above this is incorrect -- pages 201--302 of the folio edition of this work were issued in August of 1816 and pages 153--256 of the quarto edition in May of 1816.

Collectors describe Paepalanthus fasciculatus as an erect herb, 6--15 cm. tall, with white or grayish-white flowering-heads, and with white or brown flowers. They have found it growing in white sand of clearings, coarse white sand of disturbed white-sand savannas, damp or damp sandy places, sandy spots, savannas, savanna forests on white sand, moist sandy soil in dense forests, sandy rocky soil, sandy clearings in woods, open patches near rivers in sand and silt, and in slight shade at the edge of forests, along trails and riverbanks, among litter on roadsides, on sand and sandy roadsides, on rocks, rocky cliffs, and savannas with quartzite base, "common in sand along railroads", and "frequent in sandy soil of open places", at altitudes of 25 to 900 meters, flowering and fruiting from April to February. Wurdack & Adderley describe it as "locally abundant" and Maguire & Wurdack as "locally frequent".

Gleason, in his unpublished flora of Guyana, describes the species as follows: "Softly hirsute; stems slender, 4--20 cm. tall, erect or recumbent; leaves not greatly crowded at the summit, 1--3 cm. long; peduncles very numerous, 3--10 cm. long, the sheaths about equaling the upper leaves; heads 2--4 mm. in diameter, globose, becoming short-cylindric, brownish; bracts acute or obtuse, shorter than the lower flowers and usually concealed. Sandy ground, Tumatumari, Gleason 25 (Venezuela to French Guiana and northern Brazil)." In his 1931 work he characterizes the species as "widely distributed and common throughout tropical America". Actually, it is a widely distributed and very variable species found from Colombia and Venezuela, through the Guianas, to northern Brazil only. The vernacular name, "speldekussens", is recorded for it in Surinam.

The printed label accompanying Lützelburg 22455 is inscribed "Nordbrasilien", but in longhand there is also the statement "Orinoco, Esmeraldas", so it would appear that the specimen was actually collected in what is now Amazonas, Venezuela.

Material of this species has been misidentified and distributed in herbaria as "toward P. fasciculatus f. tenellus Ruhl.", as P. polytrichoides Kunth, Syngonanthus anomalus (Körn.) Ruhl., and S. umbellatus (Lam.) Ruhl. On the other hand, the Sellow 506 and A. Silva 210, distributed as P. fasciculatus, are actually P. bifidus

(Schrad.) Kunth, Martius 555 is P. bifidus f. brevipes Moldenke, Fróes 25067 is P. fasciculatus f. proliferus Moldenke, André 1049 Fróes 25067, in part, is P. fasciculatus f. proliferus Moldenke, André 1049 & K.1740 (in part), Baldwin 3222, 3389, & 3548, Cuatrecasas 6976, Fróes 25067 (in part) & 27963, García Barriga & Jaramil lo Meijia 17064, H. A. Gleason 25, F. J. Hermann 11145, Goodland & shawe 23001, Maguire, Wurdack, & Bunting 36420, Murça Pires 704 (in part) & 908 (in part), Murça Pires & Silva 4264 (in part), F. W. Pennell 1543, Pérez Arbeláez & Cuatrecasas 6757, R. E. Schultes 3943 & 5837a, Schultes & Cabrera 17194, Schultes & López 8780, 8837, 9715, & 9860, Schultes, Raffauf, & Soejarto 24210, Spruce 1360, 2128, & s.n. [in vicinibus Obidos], and J. A. Steyermark 57729 are P. fasciculatus f. sphaerocephalus Herzog, Tavares 834 is P. myocephalus (Mart.) Körn., and Tavares 827 is P. tortilis (Bong.) Mart. Hostmann s.n., Maguire & Fanshawe 23560, and Murça Pires & Silva 4708 are all mixtures with P. bifidus, Vareschi & Magdefrau 6646 is a mixture with the type of P. fasciculatus f. proliferus Moldenke, Black 48255, Maguire & Wurdack 34898, Spruce 109, and Steyermark & Bunting 102685 are mixtures with P. fasciculatus f. sphaerocephalus, and Black 48-3050 is a mixture with both P. fasciculatus f. sphaerocephalus and Syngonanthus gracilis (Körn.) Ruhl.

Ruhland (1903) cites the following specimens: VENEZUELA: Humboldt & Bonpland s.n. SURINAM: Hostmann 591, Kegel s.n., Wullschlägel s.n. FRENCH GUIANA: Leprieur s.n. (Br). BRAZIL: Amazonas: Spruce 109, 1360, & 2198, Ule s.n. All these are deposited in the Berlin herbarium except for the Leprieur collection. Uittien & Heyn (1938) cite the following from Surinam: Boldingh 3910, B. W. 409, Focke 127 & s.n., Hostmann 591, Kegel 1198, Lanjouw 505, Pulle 42, Splitgerber 702, Versteeg 735, and Wullschlägel 760, flowering in March, July, August, October, and November, recording the vernacular name "speldekussens".

The García-Barriga 14356 and the Schultes & Cabrera 14970 collections cited below are actually from the border between Amazonas and Vaupés, Colombia, and therefore could have been collected on either side (or both sides) of the border.

Dr. L. B. Smith, who very kindly determined for me the exact geographic position of "Moscofio", where André 1049 & 1079 were said to have been collected, comments that "Those 2 numbers so far apart seem suspicious. Bromels near them are from the lower Magdalena and from the Cauca Valley."

Additional citations: COLOMBIA: Amazonas: Schultes & Cabrera 16436 (Ss). Cundinamarca: André 1079 (F--533553), K.1740, in part (F--533655). Meta: Apolinar-María 166 (F--989654); Cuatrecasas 1992 (F--1330800, W--1773271); Idrobo & Schultes 551 (W--

2029465); Philipson 2376 (Em, N, W--2056787); Philipson, Idrobo, & Fernandez 1477 (Em, W--2026145). Vaupés. P. H. Allen 3083 (W--1951947); A. Fernandez 2055 (W--2199486); García-Barriga 14299 (W--2173463), 14356 (W--2173495); Humbert & Fernandez 27291 (P); Schultes, Baker, & Cabrera 18068 (Ss, W--2172057); Schultes & Cabrera 12391b (Ss), 13110 (Ss, W--2171100), 14173 (Ss, Ss), 14174 (Ss, W--2171374), 14970 (W--2113107), 15531 (Ss), 18347 (Ss, W--2172129), 19749a (W--2113117), 19954 (Ss, W--2172582).

VENEZUELA: Amazonas: Holt & Blake 463 (S, W--1517864); Lichy 15 (Ve); Lützelburg 22455 (Mu); Maguire & Politi 28309 (Be, F, K, N, Ut, Ve, W); Maguire & Wurdack 34898, in part (Mu, N); J. A. Steyermark 90336 (Ca); Steyermark & Bunting 102685, in part (Ft, Mu), 102696 (Ac); G. H. H. Tate 229 (N), 274 (N); Vareschi & Magdefrau 6646, in part (Ve--42521); L. Williams 14939 (F--1189161); Wurdack & Adderley 42913 (N, S). Bolívar: Koyama & Agostini 7388 (N, N), 7409 (N, N); J. A. Steyermark 90336 (S). GUYANA: Cowan & Soderstrom 1737 (Fg), 1748 (Fg, N); Whitton 13 (K), 250 (K).

SURINAM: Bolander s.n. (S); Boldingh 3910 (Ut--10671, Ut--44070a); Dirven LP.420 (Ut--29222b); Florschütz & Florschütz 821 (N, Ut--80225b), 1662 (Ut--80222b), 1867 (Ut--80223b); Focke s.n. (Ut--358); Gonggrijp 409 (Ut--44071a); Herb. Rottbøll s.n. [Macbride photos 22281] (N--photo of type, W--photo of type); Hostmann 31a (S), s.n. (S, Ut--344); Lanjouw 505 [photo 119/120] (N, Ut--44074a); Lanjouw & Lindeman 102 (N, Ut--17885b), 120 (N), 230 (N, Ut--17884b), 821 (N), 3011 (Ut--17886b); Maguire 23983 (N); Mc Kee 10737 (Ws); Pulle 42 (Ut--44072a); Samuels 236 (N), s.n. [Forest of Zandery, May 31, 1916] (N, W--537963); Versteeg 735 (Ut--357, Ut--44073a); Wulschlägel 760 (Br, Br). FRENCH GUIANA: Hook s.n. [22 Mai 1957] (P); Leprieur s.n. [Cayenne] (Br). BRAZIL: Amapá: W. A. Egler 1420 [Herb. Mus. Goeldi 24576] (Mi), 1421 [Herb. Mus. Goeldi 24577] (Em), 47238 (N). Amazonas: Black 48-2555, in part (Be--33291, N, Ut--97894a), 48-3050, in part (Be--36952, N, Ut--98009a); J. Elias 306 [Herb. Brad. 48084] (Z); Fróes 12237 (N), 26083 (N), 28044 (Z), 28464 (Be--75262), 28755 (Z); T. Guedes 75 (Be--43298); Holt & Blake 575 (Ut--29330a, W--1519203); Killip & Smith 30162 (Er, N, S, W--1463331); Lanna 314 [Castellanos 23784; Herb. Cent. Pesquis. Florest. 1946] (Ac); Lanna & Castellanos 23706 [Lanna 407; Herb. Cent. Pesquis. Florest. 2132] (Id); Lützelburg 21960 (Mu), 21993 (Mu); Maas & Maas 462 (N); Murça Pires 704, in part (Be--30178, Be--30178a), 721, in part (Be--30194a), 908, in part (Be--30359, Ca--59921, N, W--222467), 932 [Herb. Jard. Bot. Rio Jan. 65424] (N), 1047 (Be--30476), 1074 (Be--30499); Murça Pires & Black 932 (Ca--743840), 1220 (Be--

18205); Prance, Pena, & Ramos 3865 (Ld, N); Prance, Ramos, Farias, & Coelho 9069 (Ac, N); R. E. Schultes 3943 (W--1953294), 8720 (W--1988599), 8837 (Z), 9715 (Z); Schultes & López 9250 (W--1988651); Spruce s.n. [prope Barra] (S, S); G. H. H. Tate 3 (N). Pará: Killip & Smith 30614 (W--1463626), 30700, in part (N); Murça Pires & Silva 4264, in part (N), 4708, in part (Ut--73001), 4709 (N, W--2252821); Spruce 109, in part (Mu). Roraima: Black 51-13549 (N), 51-13601 (N); Black & Magalhães 51-12921 (Be--70714). LOCALITY OF COLLECTION UNDETERMINED: Vahl s.n. (S). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B).

PAEPALANTHUS FASCICULATUS var. IÇANENSIS Herzog in Fedde, Repert. Spec. Nov. 29: 205. 1931.

Synonymy: Paepalanthus fasciculatus var. icanensis Herzog ex Fedde & Schust. in Just, Bot. Jahresber. 59 (2): 19. 1939. Paepalanthus fasciculatus var. incanensis Herzog ex Moldenke, Known Geogr. Distrib. Erioc. 48, in syn. 1946.

Bibliography: Herzog in Fedde, Repert. Spec. Nov. 29: 205. 1931; Fedde & Schust. in Just, Bot. Jahresber. 59 (2): 19. 1939; Moldenke, Known Geogr. Distrib. Erioc. 12 & 48. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 84 & 209. 1949; Moldenke, Phytologia 4: 143. 1952; Moldenke, Résumé 98, 325, & 487. 1959; Moldenke, Fifth Summ. 1: 161 (1971) and 2: 582 & 951. 1971.

This variety is based on Lützelburg 22303 and 22448 from Tunuy, Rio Içana, Alto Amazonas, Amazonas, Brazil, collected on October 25 and 26, 1928, and deposited in the Botanical Museum at Munich.

Additional citations: BRAZIL: Amazonas: Black 48-2510 (Be--33247); Lützelburg 22303 [N. Y. Bot. Gard. type photos new ser. neg. 8851] (Mu--cotype, N--photo of cotype, Z--photo of cotype), 22448 (Mu--cotype); Murça Pires 721, in part (Be--30194), 750 (Be-30223). Pará: Ducke 11896 (Z).

PAEPALANTHUS FASCICULATUS f. PROLIFERUS Moldenke, Résumé Suppl. 4: 5, nom. nud. (1962), Bol. Soc. Venez. Cienc. Nat. 23: 300--301. 1963.

Bibliography: Moldenke, Résumé Suppl. 4: 5. 1962; Moldenke, Bol. Soc. Venez. Cienc. Nat. 23: 300--301. 1963; Moldenke, Fifth Summ. 1: 125 & 161 (1971) and 2: 951 & 967. 1971.

The acceptance of the termination "-iferus" in the accepted name for this taxon, as also in P. capillaceus var. proliferus, P. squamuliferus, and Syngonanthus caulescens var. proliferus, will be challenged by some purists, who will probably insist that the masculine form of these words must terminate in "-ifer". However, a letter to me from Dr. H. W. Rickett, dated August 31, 1971, points out that a glance through Linnaeus' "Species Plantarum" (1753) shows that he used the name "Fucus sendigerus". Jackson's "A Glossary of Botanic Terms" (1950) lists bulbiferus, glanduliferus, and spinif-

er, while Nuttall, in his "Genera" (1818), accepts Cucubalus bacciferus. Dr. Rickett concludes: "So it is best to leave the words as they were published (my usual advice). Forms in -us seem to be respectable, at least in medieval Latin. Of course such words as niger, glaber, integer cannot appear in other form. And procerus is classical Latin."

Material of this form has been distributed in herbaria as typical P. fasciculatus (Rottb.) Kunth, and, in fact, the Vareschi & Magdefrau 6646, cited below, is a mixture with the typical form.

Citations: VENEZUELA: Amazonas: Vareschi & Magdefrau 6646, in part (Ve--42521--type, Z--isotype). BRAZIL: Amazonas: Fróes 25067, in part (N).

PAEPALANTHUS FASCICULATUS f. RIGIDUS Herzog in Fedde, Repert. Spec. Nov. 29: 205 [as "rigida"]. 1931.

Synonymy: Paepalanthus fasciculatus f. rigida Herzog in Fedde, Repert. Spec. Nov. 29: 205. 1931.

Bibliography: Herzog in Fedde, Repert. Spec. Nov. 29: 205. 1931; Fedde & Schust. in Just, Bot. Jahresber. 59 (2): 19. 1939; Moldenke, Known Geogr. Distrib. Erioc. 12 & 48. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 84 & 209. 1949; Moldenke, Phytologia 4: 443. 1952; Moldenke, Résumé 98, 325, & 487. 1959; Moldenke, Fifth Summ. 1: 161 (1971) and 2: 582 & 951. 1971.

This form is based on Lützelburg 22244 from San Felipe, on the Rio Negro, Alto Amazonas, Amazonas, Brazil, and deposited in the herbarium of the Botanical Museum at Munich.

Additional citations: BRAZIL: Amazonas: Lützelburg 22244 [N. Y. Bot. Gard. type photos new ser. neg. 8850] (Mu--type, N--photo of type, Z--photo of type).

PAEPALANTHUS FASCICULATUS f. SPHAEROCEPHALUS Herzog in Fedde, Repert. Spec. Nov. 29: 205 [as "sphaerocephala"]. 1931.

Synonymy: Paepalanthus fasciculatus f. sphaerocephala Herzog in Fedde, Repert. Spec. Nov. 29: 205. 1931.

Bibliography: Herzog in Fedde, Repert. Spec. Nov. 29: 205. 1931; Fedde & Schust. in Just, Bot. Jahresber. 59 (2): 19. 1939; Moldenke, Known Geogr. Distrib. Erioc. 12 & 48. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 84 & 209. 1949; Moldenke, Phytologia 4: 443. 1952; Moldenke, Résumé 98, 325, & 487. 1959; Moldenke, Résumé Suppl. 5: 5. 1962; Moldenke, Phytologia 20: 418. 1970; Moldenke, Fifth Summ. 1: 125 & 161 (1971) and 2: 582 & 951. 1971; Moldenke, Phytologia 28: 435. 1974.

The type of this rather poorly defined form was collected by Freiherr Philipp von Lützelburg (no. 22931) at São Felipe, on the Rio Negro in Alto Amazonas, Amazonas, Brazil, on October 26, 1928, and is deposited in the herbarium of the Botanical Museum at Munich. Collectors describe the plant as an herb, to 15 cm. tall, with whitish flower-heads and white flowers. It has been found growing in dense or secondary forests, in low scrub on

white sand, rocky sandy soil, savannas, sandy savannas, fine-sand savannas, in "slight shade at edge of forests", and in alkaline soil on steep shaded banks of streamlets in pastures, among rocky outcrops on mountain summits, on sandy open hillsides, on exposed granite, and in the shade of boulders, at altitudes of 25 to 2028 meters, flowering and fruiting in every month of the year. Maguire & Fanshawe refer to it as "locally frequent on white sand", while Maguire, Wurdack, & Bunting describe it as "locally frequent in dense clumps in forest clearings at sabanita edges". Mori encountered it on open sandy roadsides in brushy clearings and secondary rainforests along with many Solanum species.

The R. E. Schultes 3943, cited below, has two in situ photographs included on the sheet. Schultes reports the plant to be "alkaloid-negative".

Material of this form has been widely misidentified and distributed as the typical form of the species and as P. cylindrocephalus Mart. and P. polytrichoides Kunth. Snethlage 8187 is a mixture with P. bifidus (Schrud.) Kunth, while Black 48-2555, Maguire & Wurdack 34898, Murça Pires 704 & 908, Spruce 109, and Steyermark & Bunting 102685 are mixtures with typical P. fasciculatus (Rottb.) Kunth and Black 48-3050 is a mixture with P. bifidus and Syngonanthus gracilis (Bong.) Ruhl.

Additional citations: COLOMBIA: Amazonas: R. E. Schultes 3943 (N). Cundinamarca: André 1049 (N), K. 1740, in part (N). Meta: García Barriga & Jaramillo Mejía 17064 (N); F. J. Hermann 11145 (N, N, W--1906238); F. W. Pennell 1543 (F--485405, N, W--1041807). Vaupés: Cuatrecasas 6976 (N, N); Humbert & Schultes 27370 (P); Pérez Arbeláez & Cuatrecasas 6757 (N, N); R. E. Schultes 5837a (N); Schultes & Cabrera 17194 (N, Ss, Z); Schultes, Raffauf, & Soejarto 24210 (Oa). VENEZUELA: Amazonas: Maguire & Wurdack 34898, in part (Mu, N); Maguire, Wurdack, & Bunting 36420 (Mu, N); J. A. Steyermark 57729 (N, S); Steyermark & Bunting 102685, in part (Mu). Bolívar: J. A. Steyermark 86888 (Fg, N, Ve). SURINAM: Lindeman 4228a (W--2559778). GUYANA: H. A. Gleason 25 (N); Goodland & Maycock 452 (M1, N); Maguire & Fanshawe 23001 (N). BRAZIL: Amazonas: J. T. Baldwin Jr. 3222 (N), 3389 (N), 3548 (N); Black 48-2555, in part (W--2655156), 48-3050, in part (W--2655155); Ducke 11206 (Es), 11539 (Bs), 11638 (Es); Fróes 25067, in part (N), 27963 (N, Z); Goeldi 3869 (Z); Killip & Smith 30160 (N, S, W--1463330); Lützelburg 22931 [N. Y. Bot. Gard. type photos new ser. neg. 8845] (Mu--type, N--photo of type, Z--photo of type); Mori 805 (Ws); Murça Pires 226 (Be--28191), 704, in part (N, N), 908, in part (N); Pabst 9429 [Herb. Brad. 58033] (Ld); Prance, Maas, Woolcott, Monteiro, & Ramos 15682 (Ac, N); Prance, Ramos, Farias, & Philcox 4837 (Ac, N); Schultes & López 8780 (N), 8837 (N), 9715

(N), 9860 (N); Spruce 932 (Mu), 1360 (B, Br, N, S, S), 2128 (Br, N, S, S). Pará: Cavalcante 86 (Bs); Ducke 9974 (Bs), 12606 (Bs); W. A. Egler 308 (Bs); O. Martins 8156 (Bs); Murça Pires & Silva 4264, in part (N); Sneath 8187, in part (Bs); Spruce 109, in part (Mu), s.n. [in vicinibus Obidos] (N).

PAEPALANTHUS FASCICULATUS f. TENELLUS Herzog in Fedde, Repert.

Spec. Nov. 29: 205 [as "tenella"]. 1931.

Synonymy: Paepalanthus fasciculatus f. tenella Herzog in Fedde, Repert. Spec. Nov. 29: 205. 1931.

Bibliography: Herzog in Fedde, Repert. Spec. Nov. 29: 205. 1931; Fedde & Schust. in Just, Bot. Jahresber. 59 (2): 19. 1939; Moldenke, Known Geogr. Distrib. Erioc. 6, 7, & 48. 1946; Moldenke in Maguire & al., Bull. Torrey Bot. Club 75: 196. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 64, 67, & 209. 1949; Moldenke, Alph. List Cit. 3: 701. 1949; Moldenke, Résumé 72, 77, 98, 325, & 487. 1959; Moldenke, Résumé Suppl. 3: 12. 1962; Lindeman & Görts-van Rijn in Pulle & Lanjouw, Fl. Surin. 1 [Meded. Konink. Inst. Trop. 30, Afd. Trop. Prod. 11]: 331. 1968; Moldenke, Fifth Summ. 1: 125, 132, & 161 (1971) and 2: 582 & 951. 1971.

This form is based on Lützelburg 22978 from Esmeraldas, on the Rio Orinoco, Amazonas, Venezuela, collected on October 8, 1928, and deposited in the herbarium of the Botanical Museum at Munich. It has been found growing in disturbed caatinga on white sand and along seepages in wet savannas, at altitudes of 300--400 meters, flowering in March, July, and September. Maguire and his associates describe it as "infrequent on moist escarpments".

Lindeman & Görts-van Rijn (1968) cite Florschütz 1662 and Maguire 24191 & 24677 from Surinam.

The form differs from the typical form of the species in being much smaller and more slender, with very thin peduncles and the flower-heads smaller, globose, and laxly flowered.

The Steyermark & Bunting 102696, distributed as "toward" this form, appears to be the typical form of the species.

Additional citations: VENEZUELA: Amazonas: Lützelburg 22978 [N. Y. Bot. Gard. type photos new ser. neg. 8839] (Mu--type, N--photo of type, Z--photo of type). Bolívar: Maguire, Steyermark, & Maguire 53609 (N); J. A. Steyermark 89689 (M1, N). BRAZIL: Amazonas: Murça Pires 226 (N); Prance, Coêlho, Maas, & Pinheiro 11659 (Ld, N). Pará: Ducke 16123 (Bs); Murça Pires & Silva 4205 (N, Z), 4208 (N, N).

PAEPALANTHUS FASCICULIFER Alv. Silv., Fl. Mont. 1: 73--74, pl. 42. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 24, 73--74, & 406, pl. 42. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 476. 1937; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worscell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 12 & 48. 1946; Moldenke, Alph. List Cit. 2: 412 (1948) and 3: 935. 1949; Moldenke,

Known Geogr. Distrib. Verbenac., [ed. 2], 84 & 209. 1949; Moldenke, Phytologia 4: 143. 1952; Moldenke, Résumé 98 & 487. 1959; Moldenke, Fifth Summ. 1: 161 (1971) and 2: 951. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 42. 1928.

The type of this species was collected by Alvaro da Silveira (no. 5) in dry fields in the Serra do Cabral, Minas Gerais, Brazil, in June of 1910, and is deposited in the Silveira herbarium. It is worth noting here that on page 406 of his work, Silveira (1928) cites Silveira 590 from the same locality. Whether this is meant to represent a second collection or merely a correction of the number given on page 73 of the work is not clear. If the latter, then it would be the type collection and the material cited by me should be so indicated.

Additional citations: BRAZIL: Minas Gerais: A. Silveira 590 [Herb. Marie-Victorin 15844] (N--photo, Z--photo).

PAEPALANTHUS FASTIGIATUS (Bong.) Körn. in Mart., Fl. Bras. 3 (1): 386. 1863.

Synonymy: Eriocaulon fastigiatum Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 624, [pl. 60]. 1831. Dupatya fastigiata (Bong.) Kuntze, Rev. Gen. Fl. 2: 745. 1891. Paepalantus fastigiatum Körn. apud Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 402. 1894. Dupatya fastigiata Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902.

Bibliography: Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 624, [pl. 60]. 1831; Bong., Ess. Monog. Erioc. 24. 1831; Steud., Non. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Fl. 3: 573 & 613. 1841; D. Dietr., Syn. Pl. 5: 266. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 275 & 333. 1855; Körn. in Mart., Fl. Bras. 3 (1): 386 & 507. 1863; Kuntze, Rev. Gen. Fl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 878 (1893) and 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 128, 151, 153, [283], 285, & 290. 1903; Alv. Silv., Fl. Mont. 1: 83. 1928; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 145. 1941; Moldenke, Known Geogr. Distrib. Erioc. 12, 29, 34, & 48. 1946; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 878 (1946) and pr. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 84 & 209. 1949; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 145. 1959; Moldenke, Résumé 98, 280, 288, & 487. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 878 (1960) and pr. 3, 2: 402. 1960; Moldenke, Phytologia 20: 422. 1970; Moldenke, Fifth Summ. 1: 161 & 480 (1971) and 2: 500 & 951. 1971.

This species is based on L. Riedel 288 from rocky places in the Serra de São Joze, Minas Gerais, Brazil, deposited in the Leningrad herbarium, collected in the flowering stage in June. Bongard's original description (1831), later amplified by Ruhl. (1903), is "Caule brevi, simplici, folioso; foliis caulinis lanceolatis, longissime acuminatis, basi subciliatis, pubescentibus; pedunculis fastigiatis, longissimis vaginisque pubescentibus".

According to Kunth (1841) the original plate 60 which accompanied this description and was cited by Bongard (1831) was never actually published. It probably exists only in the Leningrad herbarium or library.

Ruhland (1903) cites only the type collection, which is apparently the only known collection to date.

PAEPALANTHUS FERREYRAE Moldenke, *Phytologia* 3: 273. 1950.

Bibliography: Moldenke, *Phytologia* 3: 273 (1950) and 4: 143. 1952; E. J. Salisb., *Ind. Kew. Suppl.* 11: 175. 1953; Moldenke, *Résumé* 84 & 487. 1959; Moldenke, *Fifth Summ.* 1: 142 (1971) and 2: 951. 1971.

PAEPALANTHUS FILIPES Moldenke, *Phytologia* 2: 380, nom. nud.

(1947) & in Maguire, *Bull. Torrey Bot. Club* 75: 196--197. 1948.

Bibliography: Moldenke, *Phytologia* 2: 380. 1947; Moldenke in Maguire, *Bull. Torrey Bot. Club* 75: 196--197. 1948; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 66 & 209. 1949; Moldenke, *Alph. List Cit.* 3: 701. 1949; E. J. Salisb., *Ind. Kew. Suppl.* 11: 175. 1953; Moldenke, *Résumé* 75 & 487. 1959; Moldenke, *Phytologia* 20: 297. 1970; Moldenke, *Fifth Summ.* 1: 130 (1971) and 2: 951. 1971.

PAEPALANTHUS FILOSUS Ruhl. in Engl., *Pflanzenreich* 13 (4-30): 164-165. 1903.

Bibliography: Ruhl. in Engl., *Pflanzenreich* 13 (4-30): 3, 164-165, & 290. 1903; Prain, *Ind. Kew. Suppl.* 3: 126. 1908; Alv. Silv., *Fl. Mont.* 1: 127. 1928; Ruhl. in Engl. & Prantl, *Nat. Pflanzenfam.*, ed. 2, 15a: 41 & 51. 1930; Moldenke, *Known Geogr. Distrib. Erioc.* 12 & 48. 1946; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 84 & 209. 1949; Moldenke, *Résumé* 98 & 487. 1959; Moldenke, *Fifth Summ.* 1: 161 (1971) and 2: 951. 1971; Angely, *Fl. Anal. & Fitogeogr. Est. S. Paulo*, ed. 1, 6: 1158 & *Ind.* 20. 1972.

This species is based on Glaziou 19985 from Perpetua near Diamantina, Minas Gerais, Brazil, flowering in April. The type was photographed in the Berlin herbarium by Macbride as his type photograph number 10604. Ruhland (1903) notes that "Speciei sequenti [*P. viridulus* Ruhl.] valde similis, vel melius cum ea conjugenda?" The only differences he notes between the two taxa are that the sepals of the female flowers are obtuse in *P. filusus* and are subacute in *P. viridulus*. If there are no other differences, it would hardly seem worthwhile to separate them!

Citations: BRAZIL: Minas Gerais: Glaziou 19985 [Macbride photos 10604] (B--type, Br--isotype, N--isotype, N--photo of type, N--photo of type, W--photo of type); Schwacke 6421 (B, B). São Paulo: A. Lutz 353 (Z).

PAEPALANTHUS FIMBRIATUS Alv. Silv., *Fl. Mont.* 1: 197--198, pl. 130. 1928.

Synonymy: *Paepalanthus fimbriatus* Alv. Silv., *Fl. Mont.* pl. 130,

sphalm. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 197--198 & 406, pl. 130. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 476. 1937; A. W. Hill, Ind. Kew. Suppl. 9: 199. 1938; Worsdell, Ind. Lond. Suppl. 2: 183. 1941; Moldenke, Known Geogr. Distrib. Erioc. 12 & 48. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 84 & 209. 1949; Mendes Magalhães, Anais V Reun. Anual Soc. Bot. Bras. 293. 1956; Moldenke, Résumé 98 & 487. 1959; Moldenke, Fifth Summ. 1: 161 (1971) and 2: 582 & 951. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 130. 1928.

This species is based on A. Silveira 685 from sandy fields in the Chapada do Couto, Minas Gerais, Brazil, collected in April of 1918 and deposited in the Silveira herbarium. Silveira (1928) explains that "Nomen specificum 'fimbriatus' propter aspectum cili-
orum bractearum involucrentium dedi."

Citations: BRAZIL: Minas Gerais: Mendes Magalhães 48278 (Z).

PAEPALANTHUS FLACCIDUS (Bong.) Kunth, Enum. Pl. 3: 511. 1841.

Synonymy: Eriocaulon flaccidum Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 636 & 643, pl. 4. 1831. Paepalanthus juniperinus Kunth, Enum. Pl. 3: 512. 1841. Paepalanthus flaccidus Kunth ex G. Gardn. in Hook. f., Icon. Pl. 6 [ser. 2, 2]: vi & viii, pl. 526. 1843. Eriocaulon juniperinum (Kunth) D. Dietr., Syn. Pl. 5: 260. 1852. Eriocaulon juniperinum Kunth ex Steud., Syn. Pl. Glum. 2: [Cyp.] 282 & 334. 1855. Eriocaulon tortile Steud., Syn. Pl. Glum. 2: [Cyp.] 275. 1855 [not E. tortile Bong., 1831]. Paepalanthus flaccidus var. ♂ Körn. in Mart., Fl. Bras. 3 (1): 320. 1863. Paepalanthus flaccidus var. ♀ Körn. in Mart., Fl. Bras. 3 (1): 320. 1863. Dupatya flaccida (Bong.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Eriocaulon juniperinum Steud. apud Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 878, in syn. 1893. Dupatya flaccida Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902. Paepalanthus flacidus Kunth ex Alv. Silv., Fl. Mont. 1: 406, sphalm. 1928. Paepalanthus flaccidus Körn. ex Moldenke, Fifth Summ. 2: 582, in syn. 1971.

Bibliography: Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 636 & 643--644, pl. 4. 1831; Bong., Ess. Monog. Erioc. 13, 36--37, & 43--55, pl. 4. 1831; Steud., Nom. Bot., ed. 2, 1: 585. 1840; Kunth, Enum. Pl. 3: 511, 512, 578, 579, 613, & 624. 1841; G. Gardn. in Hook. f., Icon. Pl. 6 [ser. 2, 2]: vi & viii, pl. 526. 1843; Walp., Ann. 1: 891. 1849; D. Dietr., Syn. Pl. 5: 260. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 275, 282, & 334. 1855; Körn. in Mart., Fl. Bras. 3 (1): 320 & 506. 1863; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 878 & 879 (1893) and 2: 402. 1894; Malme, Bih. Svensk. Vet. Akad. Handl. 27 (3), no. 11: 27. 1901; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 2, 3, 7, 9, 26, 184--186, [283], 285--287, & 290.

1903; Alv. Silv., Fl. Mont. 1: 406. 1928; Stapf, Ind. Lond. 3: 90 (1930) and 4: 518. 1930; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 40, 42, & 43. 1930; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 878 & 879 (1946) and pr. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 12, 29, 34, 36, 41, 48, & 50. 1946; Moldenke, Alph. List Cit. 1: 223. 1946; Abbiatti, Notas Mus. La Plata Bot. 13: 310. 1948; Moldenke, Alph. List Cit. 3: 710 & 855. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 84 & 209. 1949; Moldenke, Phytologia 4: 143--144. 1952; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 145. 1959; Moldenke, Résumé 98, 280, 288, 289, 293, 325, 326, & 487. 1959; Moldenke, Résumé Suppl. 1: 20. 1959; Rennó, Levant. Herb. Inst. Agron. 70. 1960; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 878 & 879 (1960) and pr. 3, 2: 402. 1960; Eiten in Ferré, Simpos. Sobre Cerrado 194. 1962; Moldenke, Résumé Suppl. 8: 2. 1964; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 148, 149, 160, 161, 174, 187, & 189. 1969; Moldenke, Phytologia 20: 416 & 423. 1970; Moldenke, Fifth Summ. 1: 161 & 480 (1971) and 2: 500, 503, 514, 582, 585, & 951. 1971; Angely, Fl. Anal. & Fitogeogr. Est. S. Paulo, ed. 1, 6: 1158 & Ind. 12 & 20. 1972; Moldenke, Phytologia 26: 200 & 247. 1973.

Illustrations: Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: pl. 4. 1831; Bong., Ess. Monog. Erioc. pl. 4. 1831; G. Gardn. in Hook. f., Icon. Pl. 6 [ser. 2, 2]: pl. 526. 1843.

This species is based on L. Riedel 1034 from sandy somewhat damp places in the Serra da Lapa, Minas Gerais, Brazil, collected in flower in November, and deposited in the Leningrad herbarium. The type of Eriocaulon juniperinum is Sellow 5859 from São Paulo, "ad meridiem.", Brazil, and deposited in the Berlin herbarium. Bongard (1831) states that the species is "Valde affine E. bifido Schrad. sed recedit: caule non caespitoso nec bifido; staturaque multo altiore". Körnicke claims (1863) that the typical form has glabrous sheaths, while his var. ♀ (the Eriocaulon juniperinum of Kunth) has pilose sheaths, but in this connection note Ruhland's comment (below).

The Eriocaulon tortile Bong., referred to in the synonymy above, is the name-bringing synonym of Paepalanthus tortilis (Bong.) Mart.

Paepalanthus flaccidus has been found growing in swamps, campos or dry campos, damp or sandy places, and in "brejo" near streamlets, at altitudes of 300--1200 meters, flowering in March, April, June to September, November, and December. Irwin and his associates refer to it as a decumbent herb, the stems to 25 cm. long, and found it growing on lightly wooded shaded slopes.

Material of this species has been misidentified and distributed in some herbaria under the name P. bongardii Kunth. On the other hand, the G. Gardner 5244 and Mello Barreto 6338 & 9844 [Herb. Jard. Bot. Belo Horiz. 25340], distributed as P. flacci-

us, are actually P. chrysophorus Alv. Silv., while Martius s.n. [prope Cidade de Ouro Preto] is Syngonanthus caulescens (Poir.) Ruhl.

Silveira (1928) cites a no. 249, with no collector designated, from Serra de Lavras, Minas Gerais, collected in 1896. Ruhland (1903) cites from the Berlin herbarium the following specimens: BRAZIL: Goiás: G. Gardner 4379, Glaziou 22294. Minas Gerais: P. Clausen s.n., G. Gardner 4379, Glaziou 15518, 17309, & 19995, L. Riedel 1034, Schwacke 12021 & 12182. São Paulo: Glaziou 17850, Lund s.n., L. Riedel 2291, Schwacke 6616, Sellow 5859. He notes that "Folia angusta et bracteae involucrentes exteriores glabrae insignia. Varietates 2 a Koernicke vaginis pubescentibus aut glabris distinctae multis formis intermediis conjunctae sunt. Ceterum species magnitudine capitulorum valde variabilis."

Additional & emended citations: BRAZIL: Distrito Federal: Irwin, Grear, Souza, & Reis dos Santos 14449 (Ld, N); Murça Pires, Silva, & Souza 9515 (B), 9622 (B), 9627a (Z), 9755 (B). Goiás: M. A. Chase 12080 [Herb. Leonard 7654] (B, Mi, W-1495706); G. Gardner 4379, in part (N, S); Glaziou 22294 (Br); E. Santos 1718 [Sacco 1951] (Bd-27116). Minas Gerais: P. Clausen 9 [Kunth 69] (P), 13 (Br), 69 (B), 168 (B), s.n. [Pico d'Itanbira do Campo] (Br, Br), s.n. [Aug.-April 1840] (Br), s.n. [1840] (S); G. Gardner 4379, in part (W-937207, W-1066871); Glaziou 15538 (N), 17309 (Br); Herb. Hort. Osw. Cruz 4951 (Mu); Pereira 2777 [Pabst 3613; Herb. Brad. 3841] (Bd); Regnell III.1264 [21/2/1820] (W--936250), III.1264 [12/3/1847] (S, W-200751), III.1264 [25/2/1870] (S, S); L. Riedel 1034 (B-isotype, Ut-359-isotype); Wainio s.n. [Carassa, IV.1885] (S); Widgren 825 (S), s.n. [X.1845] (S), s.n. [1845] (S, S), s.n. (S). São Paulo: Brade 5535 (S), 6583 (Mu); Eiten & Eiten 1924 (Mu, N); Eiten, Eiten, Felipe, & Freitas Campos 3015 (N, N); F. C. Hoehne 360 (Mu); L. Riedel 2291 (B, M, Ut-360); Sellow 5859 (B, Br, N-photo, Z-photo). State undetermined: Martius 45 (Br), 883 (B, Mu, Mu, S), s.n. [Brasilia] (B, B); Herb. A. Gray s.n. (T); L. Riedel 2191 [San Carlos] (B), s.n. (B, Mu, S); Sellow s.n. [Brasilia] (B, B, Br, N-photo, S, Z-photo). MOUNTED ILLUSTRATIONS: drawings & notes by Körn. (B); Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: pl. 4. 1831 (N, Z).

PAEPALANTHUS FLAVICEPS Körn. in Mart., Fl. Bras. 3 (1): 412--413. 1863.

Synonymy: Dupatya flaviceps (Körn.) Kuntze, Rev. Gen. Pl. 2: 745. 1891. Dupatya flaviceps Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 299, 412--413, & 506. 1863; Kuntze, Rev. Gen. Pl. 2: 745. 1891; Jacks. in Hook.

f. & Jacks., Ind. Kew., pr. 1, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 201, 210, [283], & 290. 1903; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 145. 1941; Moldenke, Known Geogr. Distrib. Erioc. 12, 29, & 48. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 84 & 209. 1949; Moldenke, Résumé 98, 280, & 487. 1959; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 145. 1959; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 158. 1969; Moldenke, Fifth Summ. 1: 162, 480, & 481 (1971) and 2: 951. 1971; Moldenke, Phytologia 26: 243. 1973.

This species is based on an unnumbered Sellow collection from Rio das Pedras, Minas Gerais, Brazil, deposited in the Berlin herbarium, where it was photographed by Macbride as his type photograph number 10605. Thus far the species is known only from this original collection.

Citations: BRAZIL: Minas Gerais: Sellow s.n. [Rio das Pedras; Macbride photos 10605] (B--type, N--photo of type, N--photo of type, W--photo of type, Z--isotype). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B).

PAEPALANTHUS FLAVORUTILUS Ruhl. in Engl., Pflanzenreich 13 (4-30): 144--145. 1903.

Synonymy: Paepalanthus flavo-rutilus Ruhl. ex Alv. Silv., Fl. Mont. 1: 88. 1928.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 127, 144--145, & 290. 1903; Prain, Ind. Kew. Suppl. 3: 126. 1908; Alv. Silv., Fl. Mont. 1: 88 & 406. 1928; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 51. 1930; Moldenke, Known Geogr. Distrib. Erioc. 12 & 48. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 84 & 209. 1949; Moldenke, Résumé 98 & 487. 1959; Rennó, Levant. Herb. Inst. Agron. 70. 1960; Moldenke, Résumé Suppl. 3: 34. 1962; Moldenke, Fifth Summ. 1: 162 (1971) and 2: 583 & 951. 1971; Moldenke, Phytologia 26: 192. 1973.

This species is based on Schwacke 8480 from the Serra do Cipó in Minas Gerais, Brazil, found flowering in the end of April, 1892, and deposited in the Berlin herbarium where it was photographed by Macbride as his type photograph number 10606. Ruhland (1903) cites only the type collection and comments that "Species foliis, bracteis involucrantibus et praecipue indumento capitulorum flavo-rutilo insignis et P. ruficipi Ruhl. proxima." Silveira (1928) cites a no. 233, collector undesignated, from the same Serra do Cipó, collected in 1905.

Citations: BRAZIL: Minas Gerais: Schwacke 8480 [Macbride photos 10606] (B--type, N--photo of type, N--photo of type, W--photo of type).

PAEPALANTHUS FOLIOSUS Körn. in Mart., Fl. Bras. 3 (1): 333--334. 1863.

Synonymy: Dupatya foliosa (Körn.) Kuntze, Rev. Gen. Pl. 2: 745. 1891.

[to be continued]